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PRESIDENT'S ADDRESS

AMERICAN SOCIETY OF ORTHODONTISTS

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THE administrative By-laws of the American Society of Orthodontists prescribe that the president shall deliver an address at the annual meeting. I presume each in his turn wishes that it were not required. At the end of one's tenure of office, it would seem fitting for the president to remain silent thereby allowing more time for the members to voice judgment upon his administration. The duty may, however, become a pleasant one as it suggests that he become circumspective, and if, perchance, his soul be brave, he may summon sufficient courage to venture suggestions for the future welfare.

This Society was organized at the turn of the twentieth century, and with its formation was really born the practice of orthodontics as a specialty of dentistry. It has continued to gather unto itself much information from the fundamental sciences and has thereby improved its philosophy and the art of its practice until it has become recognized as perhaps the most distinct and outstanding specialty in dentistry, just as dentistry has become recognized as one of the important specialties in medicine and the health services.

It is twenty-nine years since this Society has held a scientific meeting in the city of New York. May I assure you that the task of preparing this program has been a happy one. Every member of every committee has accepted the work assigned him with enthusiasm, and the program which you will very soon be asked to accept as the order of procedure for the days to follow, is the end-product of eager and efficient teamwork. The compliments that are being given me, belong to them. I deserve credit only for having selected capable chairmen and for having appointed the members of their choice to work with them. I

Thirty-Third Annual Meeting, New York, N. Y., April 30, May 1, 2, and 3, 1935.

share, with you, pride in the result of their thorough work, and I desire now to acknowledge my deep gratitude to each one for his loyalty to me and his devotion to the science and art of orthodontics. The local members hope that this effort on the part of the colleagues in New York will preclude the possibility of your again staying away for so long a period as twenty-nine years.

In the affairs of dentistry and orthodontics, this is a time for careful thought, and a time when wise leadership is much needed. The term "new deal" is spoken of in the press and is in the minds of legislators and of the people of our nation. Just what this will eventually mean, no one now knows. Much is being said of governmental control of industry and of subsidizing certain groups of workers, at least in part. In this period of experiment and revision it is but natural that so important a function in human welfare as the health services should receive consideration, for good health is a fundamental asset of the nation and of the world. Considerable has been said and written about some form of group and socialized medicine, surgery, and dentistry which includes orthodontics, and much more is sure to come. It is, indeed, a time for us seriously to study the problem as it confronts our specialty so that we may be prepared to offer wise counsel and to give proper guidance for the best interest of every one concerned, which includes all of the people, rich, middle class and poor alike, and it must of necessity include the welfare of the practitioner and those dependent upon him. We have faith in the outcome, provided we work together and make a sincere, concerted effort to shape a sound policy and offer proper guidance which will be uniform in principle the nation over.

In orthodontics, this should surely come from the orthodontist, and this, the world's leading society, should be foreseeing enough to weigh the problem carefully and institute a sound general policy. I believe this to be the most important consideration that now confronts our specialty, for, no matter what progress may be made in the science and in the art of orthodontics or of dentistry, and indeed, of all the health services, it is secondary, at least for the time being, to the proper solution of this problem. The welfare of both the people and the professions depends primarily upon it. If we honestly believe in the importance of orthodontic service as an essential health measure, and if we be possessed of the true professional concept, then our duty to the children of the nation is inescapable, and our utmost effort must be bent toward making it available to all who really need and desire it. To do less would be failure to measure up to the reasonable expectation of the state that granted us license to practice a profession.

In the past, dentists have been giving their services and supplying materials for the care of the indigent, perhaps by going to hospitals or by working for them without fee. Physicians and surgeons have done this most generously and it has been a praiseworthy contribution, but should it be continued? Millions in money have been contributed by philanthropic citizens to hospitals and clinics. This cannot be continued because large incomes are being frowned upon and taxed into oblivion by our government. We orthodontists, together with other citizens, pay taxes either directly or as rent or otherwise. The medically indigent, I feel, should be cared for, but the cost should be paid from the public taxes, and those doing the service whether they be physicians, surgeons, dentists,

orthodontists, nurses, health workers or others, should be fairly compensated in a regular and orderly way. They should not be asked, in addition to the payment of taxes as citizens, to continue to sacrifice amounts of their time and skill to charity to the extent of its working a hardship on themselves and their families. I believe in the development of a plan that will make it possible for all the people who desire it, to have adequate health care. I like to believe that dentistry and orthodontics are high minded and that their leaders are just as eager to help provide service for the people as are the leaders in other branches of health service and as are indeed some of the officials of government. I cannot bring myself to see that the regimentation of the professions under more or less lay direction and working in whole-time clinics can supply, and continue through the years to supply, proper services at a lower cost than by a sensible system of private practice by which those unable to pay regular fees may be sent to practitioners who desire to devote a part of their time to low-pay service. The worthiness of the patient should be determined by an agency made up partly of professional workers, and there should be assurance that the bill will be paid.

To destroy the private office and the responsibility involved in private care of the patient would, it seems to me, result in the lowering of the quality of the service rendered the people. Well-regulated clinics will be needed under some conditions, but whole-time clinic service, as I have observed it for over a quarter of a century, tends to destroy both initiative and individual responsibility, and these are two essential factors to progress in the science and art of professional service. Then, in addition, I fear the possibility in a clinic system of outside direction and possibly also in time of gradually increased control of the policy governing the services rendered in the clinic. I feel that there is a probability also of political practices gradually creeping into the management of a clinic system, and this surely would tend greatly to increase the cost and also have the effect of lowering the quality of service received by the patient; and as pointed out by Dean Willard C. Rappleye, where health is concerned, high quality of service is vastly more important than lowness of cost.

I stand for a system by which all children receive thorough dental care beginning at about the second year, whether this be supervised by the board of health or the department of education. It may possibly be divided for best results: the preschool child being under the charge of the board of health, and the school child, of the department of education. Both groups should receive regular and proper care just as systematically as they are compelled to receive schooling. There should be truant officers for the health, I believe, just as much as there are truant officers for the school. By concentrating on the young child and teaching him properly concerning his nutrition and the use and care of his teeth, and with regular, periodic dental and orthodontic attention, he should reach adulthood blessed with a mouth beaming with health and efficiency that should be maintained throughout life. By this system, the mouths of children could be properly cared for at a minimum of cost. The service in most localities could be rendered by supervision in the office of the private practitioner at a minimum of cost to the community with a maximum of quality for the patient. Those parents who desire, could send their children to the private practitioner just as now they send them to the private school, while those unable to pay for

it, would have attention in the office of a practitioner who has volunteered to give low-pay service for a part of his time to children sent by the supervising agency, be that through the board of health or the department of education or some special agency—or by a combination. By this system, the morning or any hours which are less sought by private patients could be devoted to low-pay work, for, by a proper system, arrangement could be made to have the child excused from school at favorable periods to have the mouth treated. This would tend greatly to simplify the problem of providing orthodontic care. At present, the orthodontist is practically compelled to do his work in the very limited period after school and on Saturdays, a condition which is bad both for the child and for the practitioner. The school time devoted to this regular systematic dental care would be considerably compensated for by the prevention of lost school time from dental disability. The practitioner would receive his pay from the public tax at the fee mutually decided upon by the community and the profession. To the practitioner, especially the beginner, the opportunity to serve at a period when he might have many idle hours while building a practice, the while gaining in experience and acquiring some income, should be attractive. As he becomes busier with private patients, he could elect to devote fewer hours to this form of practice, and other perhaps younger men could elect to do more of this work. The profession can well give time to low-cost service, as it will tend greatly to reduce the amount of emergency and other work for the suffering and needy, the charge for which is nearly always carried on the practitioner's books. It is a sad fact that a great many professional men and women as they approach old age have much more on their books than they have in the bank. Many eminent and kindly practitioners have gone into retirement in want when they had earned honestly and well aplenty to support them and their dependents comfortably had they but been able to collect. This plan should help materially to prevent this. It is, however, only one of several plans that are undergoing study the country over. I anxiously hope that we are all seriously concerned lest apathy on the part of the professions result in the adoption of a plan promulgated by those outside that will be inimical to the welfare of both the public and the professions. It is, indeed, time for sane, determined and aggressive action. To help solve the problem for the orthodontist, I desire to recommend that the Executive Council be instructed to appoint during this meeting, a Socio-economics Committee of five whose specific duty it shall be to make an intensive study of the problem as it affects the orthodontist, and to keep the membership informed of its progress, by publication in our official organ and by presentation before the district society meetings as frequently as practicable. I urge that all our members take a keen interest in helping the committee and also their respective communities in the study and proper solution of the problem. The beneficence of orthodontics must not be for the rich alone. What is truly good for the public will be good for the profession, and conversely what is really good for the profession will be best for the public.

During the past three years, two meetings only have been held. This became imperative because of disturbed national and international conditions. Although this seemed unfortunate at the time, it has proved to be an important benefit.

By holding only two meetings in three years, it has been possible, without weakening our treasury, to remit the dues for one year, as our principal expense is incurred in providing the program. At the time of the thirty-second annual meeting in November, 1933, about one-fourth of our members were in arrears, some thirty of whom would have been automatically dropped for nonpayment of dues. Among these would have been a number of former officers and members who had worked hard for the Society before some of us had qualified for membership. There seemed no reason for increasing the treasury at the time, and the Executive Council voted to remit the dues. That this was a wise policy is proved by the fact that during the interim all have brought up their arrears except eight, some of whom have returned to general practice. With favorable action at this meeting on the applications that have passed the Board of Censors, the membership will be larger than at any time in the history of the Society. In addition, the district societies report goodly numbers of applications for active membership as provided for in the reorganization plan. These, with the active members already belonging to the district societies who have never joined the American Society of Orthodontists, will make an immediate increase of approximately 25 per cent in active membership.

The action of the Society in a stated executive session at Oklahoma City, November 7, 1933, in unanimously passing the following resolution, has borne fruit.

"Resolved, that the president be empowered to appoint a committee on reorganization of the American Society of Orthodontists whose duty it shall be to inform the generally recognized sectional or regional societies and obtain their majority opinion of the proposal, and to prepare a plan for national reorganization to be presented for discussion and vote at our next annual meeting."

A Joint Reorganization Committee of sixteen was therefore appointed, consisting of two outstanding members of each of the eight generally recognized regional societies, your president taking upon himself the task of General Chairman. (For personnel of Committee, see the *INTERNATIONAL JOURNAL OF ORTHODONTIA*, Vol. 21, No. 2, page 160, 1935.) The members cooperated faithfully, and all the regional societies officially approved the plan except the Southern. I visited this society at its annual meeting in July, 1934, and presented the plan that had been adopted in principle by all the other proposed districts. To my utter amazement, there were three members of the Southern Society, some of whom are not members of the American Society of Orthodontists, whose protest was so strenuous that final action was delayed. I was assured by a number of former officers and by many leading members that a large majority of the American Society members in the proposed Third District, which includes the Southern, would return a decided majority vote for reorganization on a national basis.

The cooperation of all the members of the Joint Committee during the past eighteen months has been most thorough and helpful. Every chairman responded to every call with promptness, to the end that the proposed Constitution and By-laws, which have been mailed as prescribed to the active members in good standing, will be adopted with probably some changes in detail to harmonize

with local conditions. Among the benefits to be derived from reorganization on the national basis, as outlined in the new Constitution and By-laws, are the following:

I. The election of officers will be continued by the mail ballot plan.

II. Voting by delegate on executive matters, thereby precluding the possibility of packing the house with local members. This has, it seems to me, been one of the principal sources of discontent in years past. Delegates can be appointed who will attend the meeting and be instructed by the district society how to vote if so desired, assuring fair representation for those districts remote from the meeting place.

III. The establishment of uniform standards for membership for all districts. At present some societies require one year of exclusive practice, others two, and still others three years, for admission. It also provides that eligibility for membership be passed upon by the applicant's professional neighbors.

IV. A considerable reduction in membership dues and other considerable economies will be made possible by the biennial plan of meeting if adopted.

V. Inclusion of the official organ in the regular dues. This is most important as only a part of the membership now subscribes, and among those who do not, are a lamentable number of the younger members and those removed from the centers where, by association, they can keep in touch with the rapid progress being made in orthodontics.

VI. With increased circulation and financial support for the official organ, it will be possible, through the Editorial and Publication Board provided, for the Association to direct and control the publication of its proceedings and have joint censorship of accepted advertisements. The important influence of the Dental Editors' Association for independent professional journalism is having a far-reaching effect. Individual dental organizations, it would seem, will in increasing numbers, edit and prepare their proceedings for publication and arrange for the details of processing, such as printing, mailing, etc., with a publishing firm. In this, it is hoped that the present publishers will be given the special consideration to which their devotion to the *INTERNATIONAL JOURNAL OF ORTHODONTIA* in years past entitles them. The greatly increased circulation will be an important factor in disseminating the rich and abundant literature of orthodontics, an important duty of the Association too often not appreciated.

There are other advantages but the above may suffice for the present.

There are approximately 62,400 dentists in the United States, 56,800 of whom are in private practice, the remainder employed at whole-time salaries.

Dentistry did not develop orthodontics. It could not by the very nature of its practice have done so. It was, however, developed by individual dentists who had a vision of the need and beneficent possibilities of orthodontics and gave their professional all in time, energy, and faith, for only by concentrated effort could the new specialty have been created. The soundness of their judgment became apparent to others, and the number of specialists grew. For years it was sadly handicapped and its progress retarded by lack of adequate facilities for a broader education in the scientific fundamentals and in the art of its practice, but happily this condition is being corrected as there are now some ten

university schools offering graduate and postgraduate courses which are attracting practitioners of dentistry in increasing numbers. The quality and uniformity of the courses will gradually improve, and very soon an increasing number of men will annually complete the course and go out to enter upon specialized practice. The recently published report on education in orthodontics in the dental schools, made by the Curriculum Survey Committee of the American Association of Dental Schools, under a grant from the Carnegie Corporation, should do much to enlighten dental faculties on the needs of orthodontic instruction. Along with this the general dental practitioner will become more fully conscious of his duty to his patient in the field of preventive orthodontics or, perhaps better said, preventive malocclusion. He will be told by the orthodontists and will learn from experience that by the early recognition of the factors which predispose to malocclusion and by their proper care, he can prevent the need of perhaps 35 to 50 per cent of corrective treatment. This part of the orthodontic problem should form the basis of the instruction given in the undergraduate course. The student will be impressed with the fact that he can be taught to render much better service to his child patient by practicing early prevention than by attempting a treatment for which he cannot be adequately prepared in the short time available in the already crowded course.

A fairly recent survey has shown that approximately 20,000 dentists are doing some corrective orthodontics, or perhaps much better said attempting the "straightening of teeth." About 6 per cent of these stated that they had studied orthodontics after leaving the dental school, which means that 18,800 dentists admitted that without preparation beyond that received in the undergraduate course, they are attempting a service for which they are not prepared, as no dental school has ever claimed to qualify all its undergraduates for the practice of orthodontics. There are fewer than 1,000 orthodontists listed in the latest orthodontic directory, only 400 of whom are members of this Society. Could evidence of our special professional duty to dentistry be stronger? Either its practitioners are not adequately informed concerning orthodontics or they are lacking in proper ethical concept. Probably both factors are involved because dentists respected by their colleagues and by members of the community could not bring themselves to offer a service diagnosed in ignorance, for the most part by dental technicians, who have only a plaster cast of the teeth from which to diagnose the condition, outline the treatment and make an appliance supposed to correct the abnormality and worse yet, tell the dentist how to adjust the appliance. It has been estimated that only about 10 to 15 per cent of corrective orthodontic treatment is given by the orthodontist. This fact alone need not be of much concern to him, for he is comfortably busy. It is no more difficult for the competent beginner in orthodontics to establish himself in practice than for the beginner in general dentistry. It would be much easier for the established orthodontist to go complacently on and pay little heed, letting those whose duty it is enforce the practice laws of the profession, were it not for the alarming fact that the people are being exploited and, what is of much graver concern, innocent and defenseless children are harmed by this pernicious form of mis-treatment. It is because of this fact that we must be true to our professional obligation to the community and bend our every effort both as individual special-

ists and as an organization toward the enlightenment of the laity, the dental profession, the dental-laboratory men, legislators, and administrators of the laws governing the ethical practice of the health services. To do this efficiently, we surely must be more closely united, for "in union there is strength." These intolerable conditions of which we are all increasingly aware have served through recent years to deepen my conviction that to accomplish an orthodontic reform best, it is imperative that the American Society of Orthodontists be organized on a broad national basis. The Joint Reorganization Committee has worked faithfully and hard to gather the opinion of the majority of the members everywhere. This has been prepared in proper form and sent to each active member.

May I, therefore, urge with utmost sincerity that you give it careful thought and be present at the stated executive session, so that we may act with wisdom to the end that the decisions reached by the majority will serve to effect a plan of organization that will best help to promote the health, efficiency, and happiness of the children of mankind.

ADDENDUM*

Maximum Quality at Minimum Cost

"The announced policy of the American Society of Orthodontists closely parallels that of organized medicine. This is not surprising in view of the similarity between the problems of distribution which confront both professions.

"Orthodontists, like physicians, are looking for a system which will make their services available to all who need them, regardless of financial limitations. Like physicians, they have come to the conclusion that the competent private practitioner offers a maximum of quality at a minimum of expense, even when the costs of treatment must be borne by the community. Dr. Leuman M. Waugh, president of the American Society of Orthodontists, sums up the situation in a few unequivocal words: 'Whole-time clinic service tends to destroy initiative and individual responsibility. . . . I do not believe that regimentation of the profession under lay direction . . . in whole-time clinics can supply proper service at a lower cost than by a sensible system of private practice.'

"The Oakland (Michigan) Plan has proved this. Since relief patients have been permitted to go directly to their family doctors, without the formality of a social service investigation of each request for medical care, the costs of attending the indigent sick have dropped and physicians have responded to their increased responsibility with a perceptible elevation of the standards of relief work.

"The principles enunciated by President Waugh illustrate anew the closeness of the ties between medicine and orthodontia. They are a reminder that all of the professions pertaining to healing are threatened with the same fate unless they offer strong resistance to the wave of indiscriminate social reform that threatens to engulf private practice. Instead of fighting separately for existence, the associated healing professions should organize a joint offensive against a common danger."

*Reprinted from the editorial section of the *New York Medical Week*.

ADDRESS OF WELCOME

AMERICAN SOCIETY OF ORTHODONTISTS

FREDERIC T. MURLLESS, JR., D.D.S., HARTFORD, CONN.

THE New York Society of Orthodontists welcomes you with the warmth which only anticipation can give. It has been nearly a generation since the American Society of Orthodontists has gathered in New York for its annual meeting.

For this occasion, members of the New York Society of Orthodontists, who are also members of the American Society of Orthodontists, have joyously and hospitably labored through many months to prepare a personal welcome for each one of you, and an outstanding program, filled with the evidences of the progress with which orthodontia has marked the interval since last the Society gathered here.

The changes that time has wrought have included the passing of a number of notable pioneers from the ranks of orthodontia, the very mention of whose names reminds us eloquently of inspired labors for the correlation of facts and the search for truth, and also revisualizes for us the steps in progress which will always be associated with their names.

It has often been remarked that when a new movement for the advancement of mankind has been ready to be launched, outstanding men of spirit and prophetic vision have been found to lead it. In leaders, orthodontia has been especially favored, and no greater proof of the successful leadership of these men need be asked than our interest today in the specialty which they founded, and our presence here for this the thirty-third annual meeting of their Society.

Together with the development of our specialty, along with the alignment of biologic and etiologic facts into relationships previously unrecognized, and the perfecting of orthodontic technics, there has come an ever-renewed vision of the availability of these dual instruments for the betterment of mankind.

The growing conviction that our specialty is a humanitarian measure renews our enthusiasms, and is a stimulus to our efforts. As a part of our parent profession of dentistry, to which the biologic findings in orthodontia have given an impetus before unknown, we are today confronted with new problems in every direction, the importance of which is emphasized by our personal experiences and observations.

Dentistry has today two imperative problems, education and public welfare—the education of the dentist, on the one hand, and, on the other hand, the difficult task of finding a livable relation between dentistry and the masses which need its benefits so much.

Thirty-third annual meeting, New York, N. Y., April 30, May 1, 2, and 3, 1935.

The subject of educational requirements for graduation in dentistry will never cease to present new phases for consideration. These will still engage the efforts of our best minds, though it must be recognized that every aspect of dental education has been changed for the better in recent years, and the immediate outlook is most encouraging. Curricular changes in dental education, however, which do not include drastic improvements in technical training will be of no avail; for it is indeed true that the value of knowledge lies solely in its application. Likewise dentistry of the future will forever fail to fulfill its destiny except in the hands of men who are technically skillful and are filled with enthusiasm for the technics of operative dentistry as a means of self-expression.

It is possible that for the present the major need in dental education, as preparation for actual practice, has been sufficiently well met in its scholastic aspects, and that the further development of the curriculum, theoretically, might well wait until the time when the public itself has been educated to a more accurate understanding of the place of dentistry as a health measure. To make dentistry as a profession more and more difficult for the student to attain will be of little use until the character of the demand is more definitely crystallized. Until the popular concept is raised to a higher average of appreciation of the practical usefulness of dental service, and the present possibilities of dentistry have been more thoroughly realized, further broadening of the curriculum may even be wasteful.

In making this statement, I should not be misunderstood as minimizing the immeasurable value of dental research, which is inspirational as well as a directing force of inestimable value. I would not hamper in the least the labors of those who are qualified and inspired to make scientific investigations. I am, however, opposing the apparent tendency to make pseudo research men and specialists out of the rank and file of dental students, and I fear the possibility of a relative neglect of the teaching technics, by which alone the tenets of undisputed knowledge may be applied to the needs of the individual.

Doubtless the vividness of the human requirement for dental service is being emphasized in our dental schools, but I question whether the necessity for intensive training to meet this demand is the dominant purpose of dental education today. If this were true, I believe the technical skill of the average student presenting for state board examinations would be far more creditable.

On the other hand, as the result of the commercial and educational campaigns now being waged in the newspapers and by radio, avowedly for the purpose of making the masses dentally minded, we are seriously in danger of producing a fictitious demand for dental service. It is a serious question whether the efforts to promote the sale of proprietaries and to increase the demand for dental equipment are producing a desire for dental attention as a necessity, or whether the public is about to regard the benefits of dentistry as optional merely, rather than as a precious opportunity.

There is a vast difference between the feeling for dental service that is stirred by the exploitation of dentistry through the ballyhoo of salesmanship,

and the receptivity that is characterized by a willingness to cooperate in the exercise of preventive measures on the part of the individual as a personal contribution to a prescribed health program.

The interweaving of oral health with general health is so dramatic that it should be a duty, as it is a pleasure, to make it known. That it is our first duty, I am convinced; for every child is born indigent, and the child of uninformed parents, even though self-supporting, is underprivileged. This, however, does not make the child or his parents receptive or cooperative. Our efforts should be thoroughly concentrated upon this point. Dentistry should be kept before the people as a health opportunity to be embraced, in distinction to a privilege to be chosen or rejected at will.

While referring for the moment to these matters as pertaining to dentistry, they are also essentially orthodontic. What has been said of dentistry as an offering to the public is even more true of orthodontia, which has now achieved some degree of recognition as an esthetic measure, though in comparatively restricted circles. The actual utilitarian and mechanistic value of orthodontia is still unappreciated by the laity everywhere. We are faced with a grave responsibility in the very necessary education of the public to the appreciation of the importance of orthodontia to the individual. As a constructive and corrective measure, orthodontia ranks with the educational system itself, in its beneficent influence upon the future of the child afflicted with a facial deformity. But there are many essential links to be established between dentistry and orthodontia before the layman may be expected to grasp this conception of the high place of orthodontia, for as a science orthodontia is not yet thoroughly sold even to dentistry.

Continuity of interest is requisite to orthodontic treatment. Until that time far in the future when orthodontia is established in the minds of the populace as of paramount importance as a health measure, the rendering of indiscriminate orthodontic service is bound to prove a futile gesture, so far as it is either optional or free, for charity as such is an affliction of the spirit. A gratuity may give a momentary thrill to both the giver and the one who receives it, and the relief of acute pain may inspire the deepest gratitude, but an oft repeated orthodontic service, no matter how beneficial, becomes a burden when the compensation involves no personal sacrifice equivalent, at least in the mind of the beneficiary, to the service received.

Orthodontia in its application has two separate and distinct functions. One of these is preventive solely, and the other corrective. Orthodontia for that reason may be divided into preventive or prophylactic orthodontia, and corrective or dynamic orthodontia, each differing from the other in method and effect.

What we may call dynamic orthodontia undertakes the correction of the established deformities and defects of occlusion and facial conformation by means of appliances and sequences of treatment. Dynamic orthodontia depends upon a grasp of the biologic and technical aspects of the subject for its success, and can be acquired only by experience and training and with an instinct for

their application. Our concept of dynamic orthodontia, as we know it, must be in constant process of readjustment on account of the variations in the individual demands in treatment. No one in orthodontic practice fails to see the need of special training for the prospective orthodontist. It is the function of orthodontia itself to provide this training by means of graduate courses in the specialty.

Prophylactic orthodontia, while still a part of the science of orthodontia, should be taught in the dental school.

No one can doubt that graduate teaching of orthodontia is of primary importance as a preliminary to its practice, both as a protection to the public and as an economic approach for the practitioner. Prophylactic orthodontia must eventually come to be recognized as of even greater importance than dynamic orthodontia, for prevention ever is more important than correction. Notwithstanding the ever-present charitable impulse, dynamic orthodontia with its prolonged period of treatment should be restricted in its application to such persons as display at least a mental appreciation of its benefits and of the obligation for cooperation in treatment.

A large proportion of the cases requiring dynamic orthodontia, in their incipency, have been associated with, or later have been complicated by, or even confirmed by, conditions which could have been corrected by early preventive measures at the hands of a dentist who had been trained thoroughly in operative technics and correctly instructed in the principles of occlusion.

Prophylactic orthodontia seeks to avert the adverse influence of dimensional changes in the teeth of the young patient as a result of accidents, caries, and loss of cusp form from wear by means of skilled dental service directed by a keen sense of occlusal values.

The importance of the science of occlusion, which is orthodontia's great contribution to dentistry, is recognized by every one in the dental world, but it is safe to say that its full worth is rarely appreciated if we are to judge by its slight influence upon the operative technics of dentistry. You will agree with me that a reasonably accurate reproduction of marginal ridges, fossae, and cusping in dental restorations is so rare as to excite surprise and comment. To the average dental mind the term contouring refers solely to the mesial and distal aspects of a restoration. The occlusal tooth form and tooth function are, all too apparently, regarded as negligible. I am convinced that there is scarcely an adult with a number of sizable occlusal fillings whose occlusion has not suffered absolute impairment in direct proportion to their number, and that, too, regardless of the occasional mesiodistal success of these restorations. Without doubt every orthodontist of experience has been distressed by observing instances in which the results of his most successful efforts in establishing occlusal relation have been depreciated in this manner, and adverse tooth movement has been initiated.

It is inconsistent surely and pathetic that any dental operation through its inefficiency should destroy the occlusal relation of an individual tooth, or by

this means progressively contribute to the destruction of the occlusion of the contiguous teeth. Such a result is a reflection upon dentistry and is inexcusable in the operator.

I am convinced that there is here an absolute demand for reform in teaching and practice, for with such deplorable technics we must believe that there is at present practically no vision of tooth form.

There is an inescapable demand for special training in preparation for the cultivation of this field of vast opportunity, in which the effects of the deforming influence of worn and carious deciduous and adolescent teeth may be averted by means of prophylactic orthodontia as expressed in accurate restorations of the individual teeth.

It is regrettable that the present trend throughout the educational world is toward the specialized and ornamental and away from the basic and fundamental, thus eventually limiting the practical efficiency of the student in proportion to the neglect of fundamentals. It will be a sad error to admit to the dental curriculum an incomplete training in orthodontia, especially if it should be done at the expense of a much needed insistence upon accurate operative technics, for which there remain, yet unrecognized, such possibilities as are presented for their application in prophylactic orthodontia. Good dentistry is orthodontic in its influence, and prophylactic orthodontia might well become orthodontia personified, and as such come within the consciousness and appreciation of many to whom orthodontia is still a luxury and is desired only as such.

Obviously orthodontia has here a paramount duty and responsibility in constantly insisting upon the importance of the principles and application of occlusion as the basis of dental operations and as the foundation of prophylactic orthodontia, as well as that of orthodontia itself.

The aspirant to the practice of dynamic orthodontia can find no better way of preparing himself for graduate study and no better way of testing his interest in orthodontics than will be afforded by a minute study of occlusion and the application of its principles through the art and science of the restoration of tooth form, which I have referred to as prophylactic orthodontia.

I am sure many have come here with questionings and convictions in their minds, and in hope of finding answers and adjustments for them. This meeting can have no higher purpose than to be a clearing house for individual problems and difficulties.

Having before us the responsibilities and possibilities of our specialty, I am sure we shall not fail to acquire both information and inspiration from this great occasion, and I again bid you the heartiest of welcomes.

GROWTH

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EARLY observations of growth, like those of Quetelet, Bowditch, Peckham, and Roberts, to mention only a few, were all based on single observations on groups of children of the same age. Almost all of these extend only over children of school age. Later on, efforts were made to add data for the first five years of life. The largest mass of material has been assembled by Woodbury. A number of growth curves have been obtained from these studies which illustrate the general characteristics of growth: the decreasing rapidity of growth during childhood, the sudden spurt during adolescence, and the gradual completion of growth. The data show that in early years boys are slightly taller and heavier than girls; that during the period of adolescence girls exceed boys in these values, while later on the boys shoot ahead rapidly. It seemed, therefore, that in early childhood the sexes are almost equal while sexual differences develop during adolescence. A study of slow growing parts of the body, like the diameters of the skull or the transversal diameters of long bones, has proved, however, that this view is untenable. In slow growing traits sexual differences are marked throughout childhood. The explanation of this behavior lies in the fact that girls are always, physiologically speaking, older than boys and that for this reason the rate of growth is accelerated, so that a girl seven years old must be, physiologically speaking, equated to a boy a little over eight years old. When statures and weights are compared from this point of view, it appears that girls are always shorter than boys of the corresponding physiologic stage of development. For slow growing measures the rate of increase is so slight as compared to the typical sex difference that the difference in physiologic age of children of the same age does not obscure these differences.

Another point has appeared from the study of the results of single massed measurements. During childhood the variability of statures and weights increases gradually. In other words, the range of values for any given age becomes wider and wider. During adolescence the variability increases rapidly, reaches a maximum, and then decreases until the adult stage is reached. I have shown as early as 1897 that the increase of variability is due to variations in the onset of puberty which brings it about that some children have the maximum rate of growth early, others late, and that the retarded children are still small while those accelerated have reached almost adult stature. On the average, tall children will grow little during this period because among

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them are many accelerated individuals; while short children will grow rapidly because among them are many retarded individuals.]

[The generalizing study here described has yielded other results of importance relating to the study of retardation and acceleration. For instance, when observations are made on the time of the eruption of a certain tooth, it is found that the eruption occurs in different individuals at different times. The range of moments at which this phenomenon occurs can be determined. In other words, we can determine the variability of the moment at which certain well-defined physiologic phenomena occur. This has been done for data on ossification of the wrist, of dental development, development of body hair, menarchy, menopause, and death by arteriosclerosis. For other traits that are partly controlled by causes other than the rapidity of development maximum data for the influence of acceleration or retardation can be determined. Thus, if it is assumed that stature and weight development depend solely upon acceleration and retardation, so that the statures and weights of children of the same age are assigned to the normal age to which they belong, a maximum value for the variability of acceleration and retardation can be obtained. These studies show that the variability of all the various phenomena increases rapidly during life.*]

The values thus obtained show that, while the variability of the length of pregnancy is a few days, sexual maturity of girls varies by more than a year, the onset of menopause by more than five years, and death by arterial degeneration by thirteen years. The rate of increase of variability, however, is apparently not the same for different physiologic phenomena. [While in most respects the condition of girls during growth is more advanced than that of boys, this is not true or is true only to a slight extent for tooth development. Evidently the conditions controlling tooth development in the sexes are more or less independent of those of growth in bulk.]

Important though these results may be, they do not clear up the problem of individual growth. Obviously not all children grow according to the standards obtained by the so-called generalizing method, but some will grow much, others little; some will mature early, others late. Their growth depends upon many circumstances: heredity, environment, health, and nutrition, to name a few determining conditions.

For a better understanding it is necessary to follow the growth curves of the same individuals through the whole period of their development. Notwithstanding the practical difficulties of obtaining data of this type, the records collected in schools have made it possible to study at least some series of this kind.

One of the important results of these studies is the proof that on the average the tempo of development of children is determined by their genetic

*We measure the variability so that the limits of time are determined within which about 68 per cent of all the occurrences take place. In other words we exclude the highest 16 per cent and the lowest 16 per cent. The distance between the time limits corresponding to these points gives the value of the variability. Since the two values are about equidistant from the average, one-half of the value is used which gives the distance from the average. This value is obtained more accurately as the square root of the average of all the squared deviations from the average. Sometimes in place of this value the so-called probable deviation is used, i.e., the limits between which one-half of all the observed values are found.

constitution. When the material is so arranged that those children are grouped together who have the maximum rate of growth at the same age and who are, therefore, comparable in physiologic development, the intensity of growth during the years of adolescence is the less, the later the maximum rate occurs. In other words, the development proceeds at a slower rate, and the adult stage is reached at a later time. The diagram in Fig. 1 will illustrate this. At the same time it seems that the more or less rapid rate of development does not influence the final stature (Fig. 2). Furthermore it can be shown that the rate of development not only is individually determined, but also is hereditary in families. This is proved by a comparison of the rates of development of slowly and rapidly developing children with the

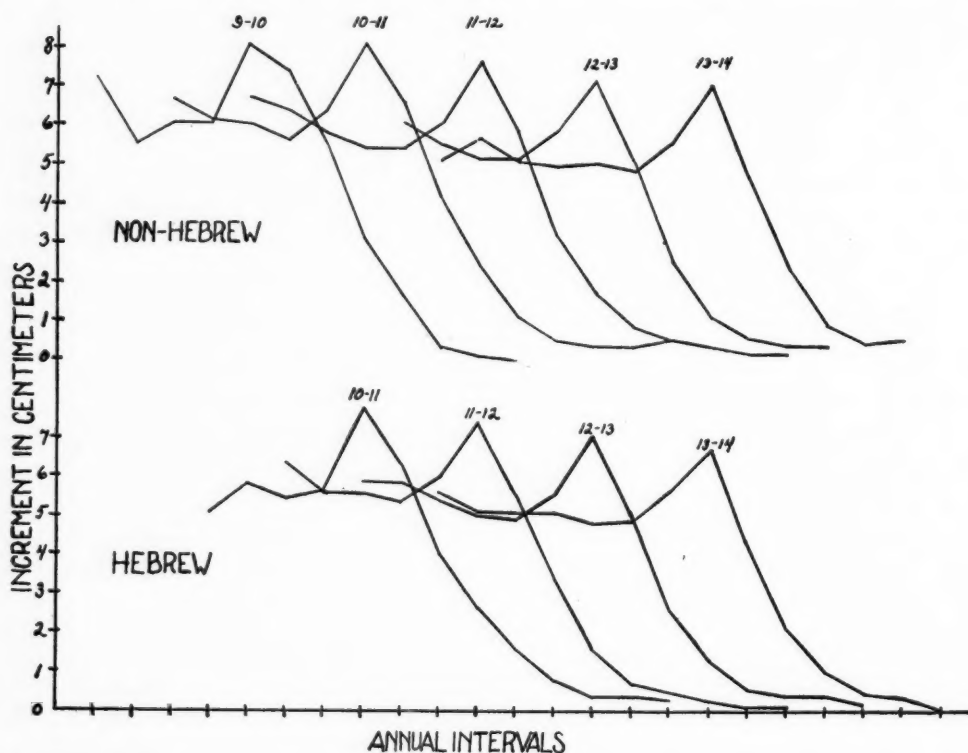


Fig. 1.—Rates of annual increment of stature for Horace Mann School girls having maximum rate of growth at different ages.

corresponding rates of their brothers and sisters. Children tall for their age have brothers and sisters who develop rapidly; short children, on the other hand, have brothers and sisters who develop slowly. Fortunately these data were obtained in a group living in very homogeneous conditions, namely, in an orphan asylum where all were treated alike. The similarity, which appeared also in a private school, cannot be due to home surroundings which influence each family in a different way and might in this way account for the similarities of brothers and sisters.

It would be erroneous to assume that environmental influences have no influence upon the rate of development. This can be shown in many ways. For Europe a gradual increase of stature has been proved in every country

for which statistics are available. By a study of the men enlisted in the Civil War, Gould and Baxter showed that immigrants were taller than the corresponding nationalities abroad. This result might have been due to a selection of taller men who migrated; but, since that time, increase in stature has been proved for parents and their own children. The fullest series is that of former students of Harvard and of their own sons, also Harvard students. It is also shown by the observations that the statures of immigrants

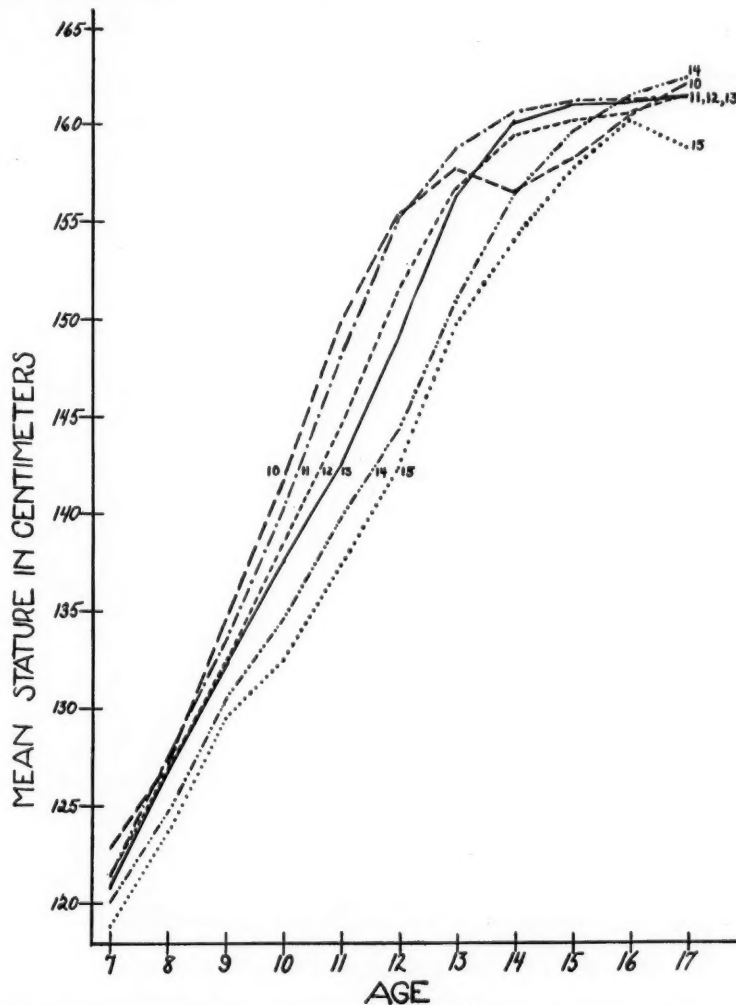


Fig. 2.—Hebrew and non-Hebrew girls at the Horace Mann School. Stature at each age according to age at first menstruation.

from Europe have remained almost stable, while their children born here have average statures which increase the same ages being compared from 1890 to 1918. Environmental effects appear also in differences between the poor and the well-to-do. These have been known for a long time. They can also be shown in the effect of institutional care upon children. Thus I have been able to show that certain groups of orphan asylum children, when compared with the entering group, were the more poorly developed the longer they had been

in the institution. This relation was, however, reversed when a new policy was instituted, when the diet of the children was changed and when they were given more fresh air and greater freedom.

All these observations have a direct bearing upon tooth development. It has been stated before that dental development is not directly related to the stages that other physiologic phenomena have reached. This is shown particularly in the eruption of teeth by the lack of a marked time difference between male and female. Other curious anomalies have been observed. While poor children lag in their bodily growth, their premolars erupt between one and two years earlier than those of the well-to-do. It might seem, therefore, that the two groups of phenomena are subject to entirely different causes. This is not quite true, for it can be shown that in a socially uniform group there is a relation between growth of the body and time of eruption of teeth. The earlier the eruption of teeth, the taller are the children. Milo Hellman's data give the result that at the time when the permanent canines or one of the premolars is erupting (his stage III B) the stature will be the greater the earlier this stage is reached. The same is true for the time when the first molar is erupting (III C) and when three or more second molars are erupted (IV A).

On account of the strong influence of environmental conditions upon the eruption of teeth it is difficult to determine the genetic influence and even more so racial influences that may exist. Hellman has shown the strong influence of social environment in a study published in 1923.¹ So far as I am aware, there are no quantitative data that show the expression of genetic characteristics in tooth development. These can be obtained by a study of the development of dentition of brothers and sisters. In regard to different races we have only the observations of V. Suk² whose data show that the permanent incisors and canines of Zulu children erupt about a year earlier than those of whites, while their premolars develop somewhat later.

The problems here touched upon show that carefully kept continuous observations on growth, including particularly the development of teeth, are required for a full understanding of the physiology of human development.

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DISCUSSION

Dr. Milo Hellman.—If the members of this Society have been lacking in knowledge on growth and development, I am sure that this meeting has furnished sufficient information to complete their education. Capping the climax of this event, it should be of interest to the members to know that we are especially privileged in having with us today the man who was the first among the pioneers in this country to direct the attention to the need of this knowledge.

In his all too short address, Professor Boas has given us in a condensed but very comprehensive form the experiences, knowledge, and perspective of the problem, ripened in the course of a lifetime. The value of it we shall be in a position to appreciate only after we have learned to interpret the meaning of our own perplexities in terms of the problems entailed in growth and development. So far some of us have learned to talk about development, but most of us have not yet overcome the impulse to do things which often interfere with it.

Orthodontia in the relatively short period of its independent existence has reached out in various directions for a basic support. No other branch of knowledge has been so helpful in giving it a solid foundation as the understanding of the intricacies entailed in the development of the individual. From the very beginning there was a natural tendency for orthodontia to lean in that direction, but because of youthful vagaries there was considerable confusion and misunderstanding. For example, in the beginning the idea prevailed that orthodontic treatment was a means to propagandize for bigger and better children. Since it was thought that malocclusion of the teeth was a handicap to mastication and that improper mastication interfered with proper digestion, which in turn affected nutrition, it was a foregone conclusion that individuals with malocclusion of the teeth were also afflicted with malnutrition. By the correction of malocclusion it was thought that the state of nutrition would be benefited. To prove it, all orthodontists equipped themselves with weighing scales. As the treatment was progressing, the scales were expected to show an increase in the weight of the patient. And they did. But it did not occur to the orthodontist of the early days that, since the treatment stretched over periods of years, the child patient was really increasing in size at the same time that he was getting heavier, and that getting older had something to do with it. As soon as this was realized, the scales were discarded.

It was about this time that I had the good fortune, through the influence of Professor Boas, to make some observations on teeth of the children at the Hebrew Orphan Asylum. Professor Boas was much interested in growth studies on them. At the first opportunity I was eager to show that malocclusion of the teeth was a detriment to development. As soon as I finished my observations in 1920, I tabulated my data, dividing the children according to sex and age, and each sex according to the occlusion of the teeth. I was sure that there would be marked differences between those children with normal occlusion of the teeth and those with malocclusion, if compared according to their heights and weights. In Table I is shown such a comparison as it appears among the girls. As shown in this table, there are really no significant differences. Whatever difference in height there is, is in favor of malocclusion. In weight the differences seem to be slightly more marked, but I doubt whether they are more significant. It thus became apparent that, so far as general physical status is concerned, as long as the children are healthy and well cared for, the occlusion of the teeth has little to do with it.

TABLE I

COMPARISON OF HEIGHTS AND WEIGHTS BETWEEN GIRLS HAVING NORMAL OCCLUSION AND GIRLS HAVING MALOCCLUSION OF THE TEETH

AGE	HEIGHT						WEIGHT					
	NORMAL OCCLUSION			MALOCCLUSION			NORMAL OCCLUSION			MALOCCLUSION		
	NO.	AV.	S. D.	NO.	AV.	S. D.	NO.	AV.	S. D.	NO.	AV.	S. D.
5	10	40.50	1.60	6	41.67	2.76	10	37.90	4.65	6	39.33	5.30
6	10	42.50	0.98	12	42.17	0.80	10	39.00	2.15	12	42.50	6.42
7	18	43.89	1.91	35	44.06	2.22	18	42.06	4.59	36	44.24	5.01
8	10	46.10	3.57	33	45.94	2.25	10	50.70	7.17	33	46.08	5.22
9	17	48.65	1.24	43	48.77	3.35	17	55.23	5.16	42	53.42	8.37
10	15	50.80	2.85	51	50.25	2.27	15	60.41	11.16	51	59.42	7.23
11	23	51.56	3.18	29	53.00	3.18	23	60.51	7.74	29	65.56	10.74
12	13	54.46	1.45	22	54.41	2.59	13	70.86	8.43	22	75.35	12.66
13	18	56.72	2.33	45	56.58	3.12	19	80.04	13.29	44	82.75	14.90
14	10	59.50	2.50	23	57.09	3.10	10	94.80	10.41	22	91.60	20.65
15	7	60.29	1.66	12	59.80	3.14	7	97.85	18.00	12	98.50	12.35

NO. = Number.

AV. = Average.

S. D. = Standard deviation.

Height is given in inches; weight in pounds.

It used to be thought also that of all types of malocclusion that showing Class II, Division 1 was most detrimental to health, and by inference to development. In Table II is shown a comparison of heights and weights of girls with Class I, Class II, division 1, and Class II, division 2. This tabulation is made on the basis of stages of dental development.

Fig. 1.

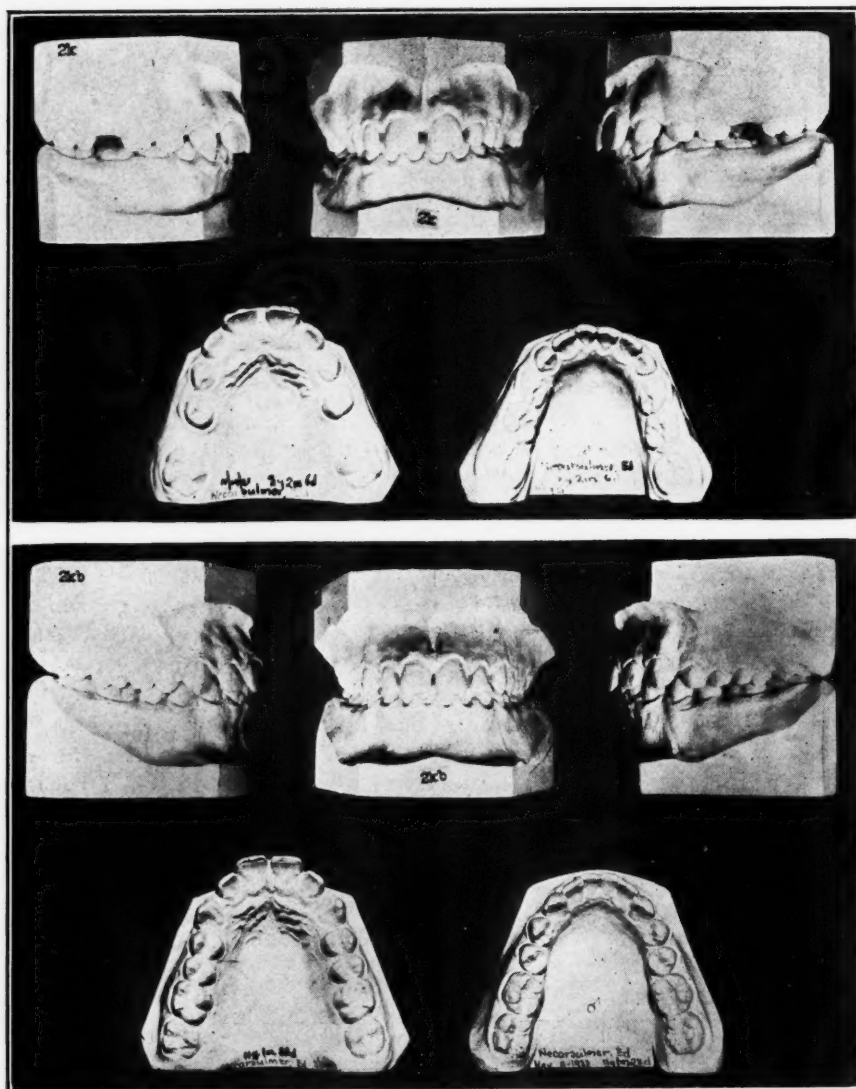


Fig. 2.

Fig. 1.—Casts of dentition of boy, aged eight years two months, showing loss of maxillary deciduous second molars.

Fig. 2.—Casts of dentition of boy shown in Fig. 1, aged eleven years two months, showing erupted maxillary second premolars and in normal occlusion. No space maintainers were used.

Figs. 3, 4, and 5.—(See opposite page for illustrations.)

Fig. 3.—Casts of dentition of boy, aged six and one-half years, showing loss of maxillary deciduous central incisors, mandibular left lateral incisor, and maxillary left deciduous second molar. Mandibular left permanent incisor erupting lingually.

Fig. 4.—Casts of boy shown in Fig. 3, four months later, showing erupting permanent maxillary central incisors and mandibular left lateral incisor which is rotated. The maxillary left premolar is still missing, but the space is not closed.

Fig. 5.—Casts of boy shown in Fig. 3, thirteen months later, showing progress in eruption of maxillary permanent central incisors, loss of maxillary right deciduous lateral incisor, progressive alignment of mandibular left lateral incisor, and erupting maxillary left second premolar. No space maintainers used.

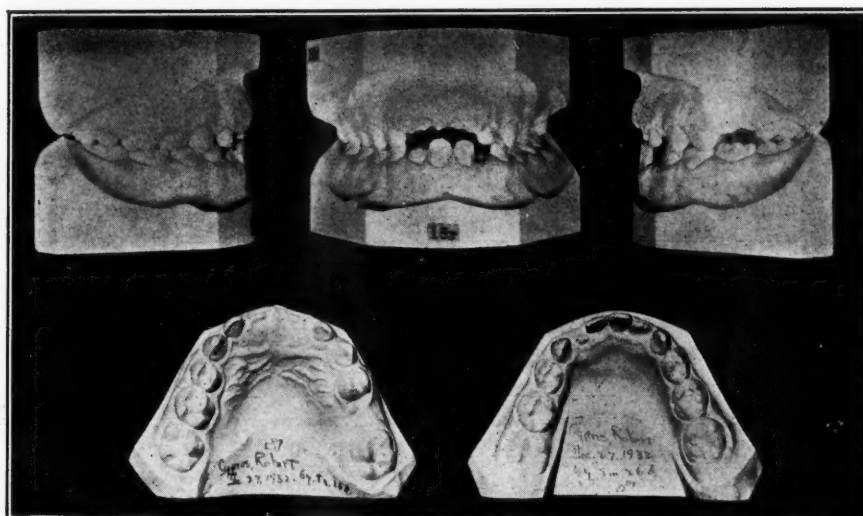


Fig. 3.

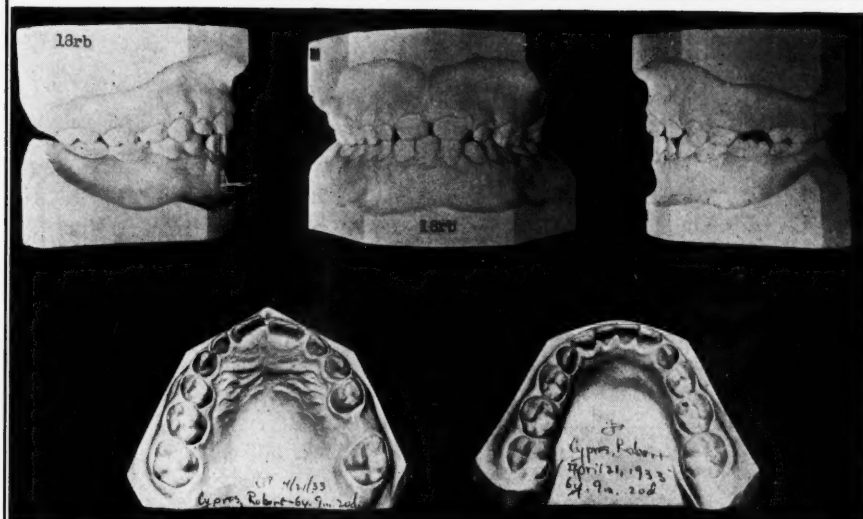


Fig. 4.

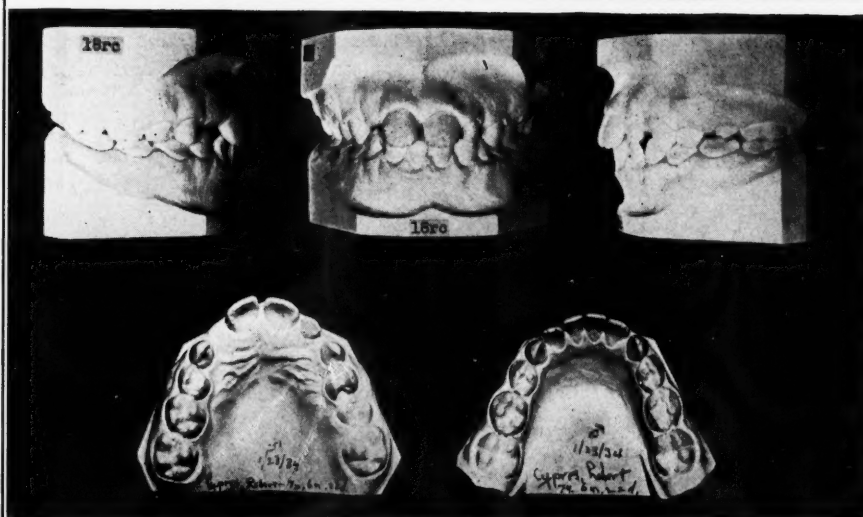


Fig. 5.

Figs. 3, 4, and 5.—(See opposite page for legends.)

It again shows that, on the average, the girls with Class II, Division 1 malocclusion are taller and heavier than those with either of the other classes of malocclusion. So the fear that this sort of malocclusion is worse than the others may again be allayed.

TABLE II
COMPARISON OF HEIGHTS AND WEIGHTS OF GIRLS WITH DIFFERENT FORMS OF MALOCCLUSION
OF THE TEETH AT CERTAIN STAGES OF DEVELOPMENT

HEIGHTS									
STAGES	CLASS I			CLASS II, DIV. 1			CLASS II, DIV. 2		
	NO.	AV.	S. D.	NO.	AV.	S. D.	NO.	AV.	S. D.
III <i>A</i>	50	52.38	3.66	24	53.15	1.98	26	52.15	2.25
III <i>B</i>	87	56.47	3.52	28	59.46	4.08	30	55.90	3.23
III <i>C</i>	24	60.54	3.20	18	60.56	3.58	21	62.38	3.09
IV <i>A</i>	122	64.57	2.60	85	64.95	2.84	21	64.29	1.77
WEIGHTS									
III <i>A</i>	50	65.04	11.25	27	64.89	10.92	24	58.75	8.76
III <i>B</i>	85	78.20	12.60	27	79.67	14.61	30	73.60	10.86
III <i>C</i>	24	94.15	7.80	18	94.83	14.46	21	98.35	17.80
IV <i>A</i>	122	111.80	16.85	84	115.75	17.65	20	113.05	14.85

NO. = Number.

AV. = Average.

S. D. = Standard deviation.

Height is given in inches; weight in pounds.

The effect of development upon differentiation in the dentition Professor Boas has clearly demonstrated. We need only be reminded of the fact that as variability at the approach of maturity decreases, the trend toward uniformity increases. If the trend is toward a normal type, then the chance for improvement should always be taken into account. For example, in the dentition of the boy shown in Fig. 1, the maxillary deciduous second molars were extracted at eight years of age. According to available knowledge, the loss of these teeth occurred three and a half years ahead of scheduled time. The maxillary second permanent premolars were not due to erupt for four years. Among orthodontists there is some apprehension about this sort of thing, and space maintainers are used in such cases. In this case confidence was placed in the natural trend and the outcome was anxiously watched for. Three years later the dentition looked as shown in Fig. 2, although nothing was done for it orthodontically. In this boy space maintaining was not necessary, because the tempo of his dental development was rather quick. At eleven years of age this boy had all but the third molars in place and in normal occlusion.

Another more interesting case of this sort is shown in Fig. 3. This illustration shows the dentition of a boy six and a half years of age. He was brought to me for orthodontic treatment. This stage of development annoyed the mother, who thought something might be done to improve it. When she was assured that it was quite a natural course of events, she felt better, but I was not so comfortable about the outcome of the extracted maxillary left deciduous second molar. The boy was only six and a half years old and would have to wait five and a half years for the permanent successor to fill the gap. The mandibular left lateral incisor, too, was erupting lingually. I kept the boy under observation. Four months later the dentition looked as shown in Fig. 4. The front of the mouth was improved, but the back was as before. The encouraging feature was that the space for the maxillary left second premolar did not close, in spite of the lack of a space maintainer. Nine months later, Fig. 5, I was much relieved to find that at seven and a half years the boy was erupting a tooth (maxillary second premolar) that was not due for four and a half years.

Such instances make one mindful of the fact that there is a trend to a normal type, but the ways toward it are as different in individuals as are the individuals themselves. It is the undisputed merits of Professor Boas' observations and his brilliant researches on the nature of growth and development which stimulated most of the investigations on this problem being pursued today. To him I, too, am indebted for much encouragement, valuable help, and patient guidance. This Society is to be congratulated upon the good fortune of having him here and getting the benefit of his valuable contribution.

Dr. Franz Boas.—A question has been raised relating to the decrease in intensity of growth with the deferred time of maturation. It was suggested by the questioner that on account of the length of time and the amount of growth which precede the period of maximum growth the total amount must still be greater than in the retarded cases.

I showed one slide in which I gave the total amount of growth around the period of maturity, from the time of three and one-half years before the maximum rate of growth to three and one-half years after the maximum rate of growth. That covers a span of seven years. The tabulation of the total amount of growth during such periods shows that the earlier the time of maturity the greater will be the total amount of growth. But this is balanced in such a way that the children who grow rapidly during the selected period of seven years will afterward grow so little that the previous advantage is lost. Furthermore, in still earlier years, there is a general slowing up of the rate of growth, and this must have retarded the accelerated children somewhat. The influence of the early period is not yet statistically known. The general result of these complicated processes, so far as we can see now, is that there is a balance; and the results in regard to size of a retarded or accelerated rate of growth, provided the environmental conditions are equally favorable, are the same.

GROWTH OF THE JAWS AND THE ETIOLOGY OF MALOCCLUSION

ALEXANDER SVED,* B.S., D.D.S., NEW YORK, N. Y.

(Continued from page 802, September)

CHAPTER II

GROWTH AND DEVELOPMENT OF THE JAWS AND DENTAL ARCHES

In order to understand the conditions under which normal development takes place, it becomes necessary briefly to review the formative history of the jaws and the dental arches.

Bone may be formed either in a matrix of cartilage or in a matrix of embryonal connective tissue. These are referred to as *intracartilagenous* and *intramembranous* bone formations, respectively. The mandible begins to calcify in the sixth week of fetal life, before any other bone in the body except the clavicle. Each half is developed: (1) from the ventral portion of Meckel's cartilage, (2) the membrane overlying it, and (3) certain accessory cartilages. The greater part of the bone is developed from the membrane. The extreme ventral end of Meckel's cartilage disappears, but part of it is incorporated in the mandible from a point near the symphysis to the level of the mental foramen. One of the accessory cartilages forms the condyle; another forms a narrow strip in front of the coronoid process. These different structures are not ossified from separate centers. Each half of the mandible is ossified from one center, which appears in the membrane overlaying the ventral part of Meckel's cartilage. The ossifying process spreads through the membrane and envelops and invades the cartilages. Thus in the development of the mandible we observe both intramembranous and intracartilagenous bone formations.

The maxillae are developed in connective tissue around the oval aperture of the embryo. Ossification commences from *one center*, at the end of the sixth week in membrane above the canine tooth germ. The premaxillae are each ossified from two centers, the facial and palatine centers. The facial center ultimately contains the incisor teeth and forms the anterior part of the hard palate. (Cunningham.¹)

The formation of teeth begins in the seventh week of intrauterine life. It begins as a thickening of the oral epithelium which soon dips down into the underlying connective tissue forming the *dental lamina*, a crescentic plate of cells following the line of the gums. After the formation of the dental lamina a groove appears along the margin of the jaw where the ingrowth of the epithelium occurred. This is known as the *dental groove*. The epithelium of the dental lamina is at first uniform in thickness. Soon, however, at intervals along the outside of the dental lamina, the cells undergo proliferation and

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form thickenings, ten in the maxilla and ten in the mandible, each one corresponding to the position of a future deciduous tooth. These thickenings become the cup-shaped *enamel organs*, which enclose a dense mesenchymal tissue, constituting the *dental papilla*. It becomes the pulp of the tooth and produces at its periphery the layer of *dentin*. As the tooth develops, the connection between its enamel organ and the dental lamina becomes reduced to a flattened strand or neck of epithelial tissue, which subsequently disintegrates. (Bailey.²)

In order to produce the enamel organs for the three permanent molars, which develop behind the deciduous teeth on either side of the jaws, the dental lamina grows backward, *free from the oral epithelium*. This backward extension becomes thickened and then impocketed by a papilla, thus forming the enamel organ for the first permanent molar in embryos of seventeen weeks. It grows farther back and gives rise to the enamel organ for the second molar at about six months after birth, and for the third molar at five years. All the other permanent teeth, which later replace the deciduous teeth, develop from enamel organs on the labial side of the dental lamina, and are situated normally on the *lingual side of the deciduous teeth*.

The calcification of the teeth begins earlier than is generally supposed. It begins with the formation of the *dentin cap* at the summits of the dental papillae, and this always precedes the formation of enamel. According to Magitot and Legros, the dentin caps of the teeth begin to form as follows: (Stein.³)

<i>Deciduous Teeth</i>	{	Incisors and canines: sixteenth to seventeenth week of intrauterine life
		First and second molars: seventeenth to eighteenth week
<i>Permanent Teeth</i>	{	First molars: sixth month of intrauterine life
		Incisors: first month after birth
		Canines: third to fourth month
		Premolars: sixth month
		Second molars: third year
		Third molars: twelfth year

At birth both the maxillae and the mandible are composed chiefly of bone, surrounding the developing tooth sacs. The alveolar arches are covered with pads of firm gum, which enables the infant to grasp the nipple during sucking. If the mandibular pad of gum does not meet the maxillary pad as a result of simple closure, then the mandible is brought forward into the proper position. This is a beneficial influence toward the establishment of normal jaw relationship.

The deciduous central incisors are usually the first teeth to erupt. They make their appearance between the sixth and eighth month after birth. Previous to eruption, the instinct to gnaw becomes pronounced, and the mandible not only is used more on account of the gnawing movements, but also is set more or less continuously so that its position comes to correspond to that which is required to bring the gum pads at the front of the mouth into accurate apposition. These gnawing exercises, together with the voluntary set of the mandible and other soft parts, tend to make the mandible grow when it becomes necessary, so that the distance between the condyle and the anterior part of the pad of gum covering it corresponds exactly with the distance from

the glenoid cavity to the pad of gum over the maxillary incisors. This instinct to gnaw as the teeth erupt induces a *bite of convenience* so that the maximum utility is assured. (Wallace.⁴)

The deciduous lateral incisors follow the central incisors, and they usually erupt between the eighth and twelfth month.

The next teeth to find their position in the mouth are the deciduous first molars between the twelfth and sixteenth month, and these are followed by the canines from the seventeenth to twentieth month. It is necessary to note that the canines seldom if ever follow the lateral incisors; the deciduous first molars always precede them. This is also true in the permanent dentition, and usually the canines are the last teeth to erupt anterior to the permanent first molars.

The deciduous arches are completed between the twentieth and thirty-sixth month with the eruption of the second deciduous molars. The deciduous teeth serve the child without further additions until the end of the sixth year, when the permanent teeth begin to make their appearance. During this time certain preparatory changes occur, and it is important to note the various alterations in arch form and arch relationships.

When the deciduous dentition is completed by the eruption of the deciduous second molars, there is perfect approximal contact between the teeth of both arches. The distal surfaces of the maxillary and mandibular deciduous second molars are in the same vertical plane, so that if without further changes the permanent first molars would erupt, they would not come into normal occlusal relationship. During the fifth year, however, a lateral growth of the arches takes place, so that spaces appear between the incisors and the canines. At the end of the sixth year these spaces are quite wide. The lateral development is more pronounced in the maxilla than in the mandible, and the developmental spaces are correspondingly larger. In order to compensate for this difference in lateral development, the mandible gradually assumes a more forward position, thus bringing a wider portion of the mandibular arch in occlusal contact with the more rapidly widening maxillary arch. As a result, the distal surface of the mandibular deciduous second molar is in a more anterior position than that of the maxillary, so that on eruption the permanent first molars will be in normal relationship.

The forward movement of the mandible is opposed by the overlap of the maxillary incisors, which in the deciduous dentition is normally deeper than in the permanent. The deciduous dentition, however, is subject to abrasive influences, and in the fifth and sixth year the attrition is well pronounced. The abrasion of the deciduous teeth is more rapid than that of the permanent teeth, and soon an edge-to-edge bite is established which allows the mandible to grow well forward.

In addition to lateral growth the jaws grow vertically and forward, so that during this period the entire face changes and shows development laterally, downward, and forward. The alveolar processes in the maxilla grow

downward, and thus the surface of occlusion is lowered. In the mandible, on the other hand, the alveolar processes grow upward, and in this manner the face height is materially increased.

Between the sixth and the seventh year, the permanent first molars erupt. At about the same time the resorption of the roots of the deciduous central incisors is completed, and their permanent successors take their place. Soon after the lateral incisors erupt, which are followed in the tenth year by the first premolars. The second premolars usually appear in the eleventh year, while the canines and the permanent second molars erupt in the thirteenth year of life. The third molars may take their position in the arch any time between the sixteenth and fortieth year.

During this period further changes in tooth and jaw relationships occur. While the general direction of growth is the same as in early childhood, a more rapid mesial movement of the posterior teeth characterizes this period, which is not present in the deciduous dentition.

The permanent incisors and canines are considerably wider than the corresponding deciduous teeth. Under normal conditions the developmental spaces and the lateral growth during and even after eruption, provide sufficient space to accommodate them. The first and second premolars are smaller mesiodistally than the deciduous first and second molars, so that when the permanent teeth come into position an unoccupied space of 1 to 2 mm. is present. This space is gradually closed by the forward drift of the permanent first molars, which is usually greater in the mandible than in the maxilla because there is a greater difference in width between the mandibular deciduous first and second molars and their permanent successors, than between the corresponding teeth in the maxilla.

With the eruption of the permanent first molars the alveolar processes over both arches grow occlusally. This has a tendency to raise the bite, but on account of the length of the permanent incisors, the overbite remains rather deep. It must be noted, however, that a moderately deep overbite from the seventh to twelfth year is not abnormal, for such conditions are corrected by a further growth of the alveolar processes in the posterior regions. The permanent first molars are usually sufficient in themselves to support and raise the bite, which is always followed by an occlusal growth of the deciduous molars. As growth progresses, the maxillary arch is brought forward as a result of the molding of the bones of the face and cranium. The growth of the brain brings about a relatively great increase in the size of the brain case, with the inevitable forward translation of all the bones of the face. In the anteroposterior direction the external auditory meatus and the mandibular fossa occupy approximately neutral positions, so that during growth the brain case is extended anteriorly and posteriorly from these structures. Thus the maxillary arch is pushed forward as a result of the forward growth of the maxilla, but to a greater extent by the forward growth of the other bones of the face and the cranium. The zygomatic arch is formed by the zygoma of the temporal bone, and the malar bone and its temporal process. Posteriorly it springs from the temporal bone from a point immediately above the

external auditory meatus which is in the neutral position of cranial growth. Anteriorly it forms the hard prominent part of the cheek, and it joins with the maxilla and frontal bones. Thus the anterior part of the zygomatic arch is in an area of active forward growth which induces an elongation in the entire zygomatic arch. The rate of elongation, however, is much slower than the forward displacement of the maxilla, and for this reason the zygomatic (or malar) bones lag behind the maxillary teeth. This was interpreted by Zsigmondy and others, as a backward growth of the zygomatic bones and the temporal processes, which in view of the definite forward growth of the face and the increase in the size of the zygomatic bones cannot take place. In a correlated study it would be more in conformity with the other simultaneously occurring events to consider this as a lagging behind of the zygomatic bones. The great amount of forward displacement of the maxilla is shown by the series of illustrations offered by Zsigmondy, and it must be particularly pointed out that this forward displacement is even greater than that shown in the illustrations, because they represent only the difference between the forward growth of the zygomatic bones and the forward displacement of the maxilla, to which the elongation of the zygomatic arch must be added. The etiology of various dental deformities is directly traceable to this forward growth, and it is important to emphasize again that the actual forward growth of the maxillary bone itself is small as compared with its forward displacement, which is due to the growth of other bones.

During this growth period, the mandibular teeth maintain the normal occlusal relationship with the maxillary teeth. Since the mandible is hinged to the cranium approximately at a neutral point of growth, in order to keep pace with the rapidly advancing maxilla *it must grow forward at a greater rate than any one of the several bones which take part in the forward displacement of the maxilla. Thus the mandible grows more rapidly in the anteroposterior direction than the maxilla.*

It must further be recognized that as growth progresses the several bones which are under consideration at present *must grow at different rates* in order to maintain proper relationships with the adjoining structures. This difference in the rates of growth is directly responsible for the various types of deformities we are called upon to treat; and, as we shall see later, any influence interfering with normal growth may produce such deformities.

It has been stated before that similar changes take place in the lateral growth in the maxilla and the mandible. Since these are the supporting structures for the teeth, their development is greatly influenced by the presence of the teeth, although muscular influences are also important determining factors. The development of the dental arches, however, may be regarded as reliable indices of maxillary and mandibular growth, and under ordinary conditions the establishment of normal occlusal relations of the teeth suggests normal jaw development. The lateral measurements of the dental arches directly indicate the amount of growth in that direction on account of the opposite growth of the symmetrical halves. In the anteroposterior direction the meas-

urements of the arches do not show the actual arch or bone development, because the points of measurement suffer translation in the same direction during growth.

The investigation of lateral development may be based on the study of a large number of subjects of different ages. The average measurements of the dental arches of the different age groups will enable us to form a sufficiently reliable conception of lateral growth. More convincing information may be gained from the study of the changes taking place in the dentitions of the same individuals over a long period. Measurements made at intervals will reveal the exact nature of these changes. Unfortunately, an investigation of this kind would extend over a period of fifteen to twenty years, and at present we must be satisfied with the conclusions which can be drawn from groups of individuals at the various ages, or the observations made on one single subject by J. Sim Wallace. These valuable series of models and measurements are published, and the conclusions which can be drawn from them agree with the results obtained from the work of Hellman. For this reason the Wallace series was selected to illustrate the lateral changes during development.

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(To be continued)

TREATMENT OF AN UNUSUAL CASE OF NEUTROCLUSION*

HENRY U. BARBER, JR., D.D.S., NEW YORK, N. Y.

IN PRESENTING this apparently simple case I do not have in mind the individual who finds this particular type of case simple to treat after a correct diagnosis, but rather the individual who, from lack of experience, would attack the problem from the wrong angle and thereby come to grief as a result.

Fig. 1.

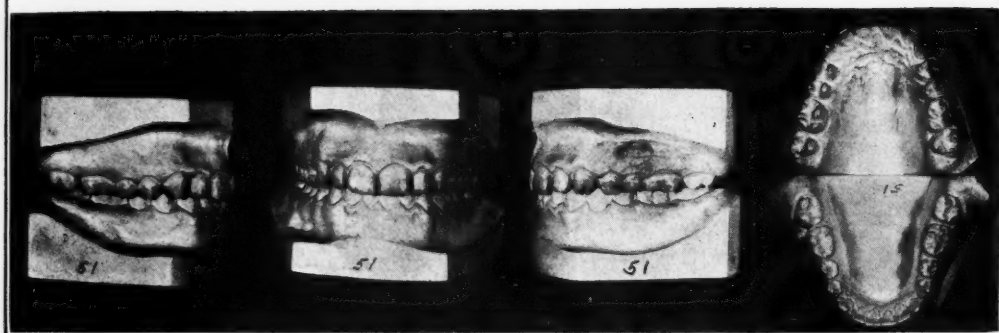


Fig. 2.

It is with this thought in mind that this report is offered.

The patient was a girl, aged ten and one-half years, height 56 inches, weight 69 pounds. She had had measles, whooping cough, and pneumonia. Her tonsils had not been removed, and there was no history of adenoids.

Attributed Etiology.—Too long retention of the mandibular left second deciduous molar which has held the first permanent molar distally. A history of thumb-sucking for about one year undoubtedly caused the spacing of the maxillary anterior teeth. (Fig. 1.)

Diagnosis.—I believe this to be a neutroclusion case, as the relative position of the mandible to the cranium was good; therefore it was reasonable to assume

*Presented at the Thirty-Third Annual Meeting of the American Society of Orthodontists, New York, N. Y., April 30, May 1, 2, and 3, 1935.

that the intermolar relationship on the right side was correct and that the displacement on the left side was due to too long retention of the mandibular deciduous second molar.

Treatment.—In the beginning casts were made, radiographs were taken, and the treatment was started as follows.

All first permanent molars were banded with round tubes placed horizontally on the buccal surfaces of each band, and maxillary and mandibular plain labial arches of 0.036 inch wire were made and inserted. The two mandibular canines were banded at this time for the purpose of rotation, and an intermaxillary elastic was inserted on the left side to bring the molar and premolars forward. After eleven months these teeth had moved into their proper relationship with the maxillary teeth.

At this stage of the treatment the mandibular bands were removed; half round tubes were soldered to the lingual surfaces, and a lingual arch was made to fit snugly against all the teeth for stabilization and retention. Intermaxillary elastics were inserted, and the stops were moved on the maxillary arch to permit the movement of the maxillary anterior teeth distally to close the spaces which had been caused by the sucking of the thumb. This of course accentuated the overbite, and as the spaces were nearly closed, the maxillary appliance was removed and a vulcanite bite plate was inserted to correct the overbite. A labial wire was used on the plate so that the vulcanite could be cut away, leaving a space so that the four anterior teeth could be moved still farther distally as the mandibular teeth were depressed.

This treatment was continued for seven months, after which the mandibular bands and appliance were removed and the patient was placed on a passive treatment basis, leaving the bite plate to be worn for retention.

Six months later the patient was instructed to wear the plate at night only, and four months later treatment was discontinued. (Fig. 2.)

A CASE OF LINGUAL OCCLUSION OF THE MAXILLARY INCISORS*

O. N. CATCHPOLE, L.D.S., STORTFORD, ENGLAND

THIS is a case which I treated in a simple manner. The patient, a girl, was ten years, eleven months old when she first came to me. The mandibular incisors were in front of the maxillary incisors: the overbite was excessive. None of the second premolars had erupted, and after x-ray examination only the mandibular left second premolar was found present. I wanted to use a fixed

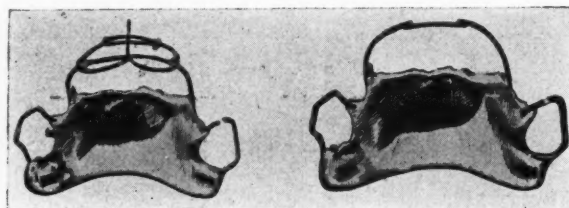


Fig. 1.

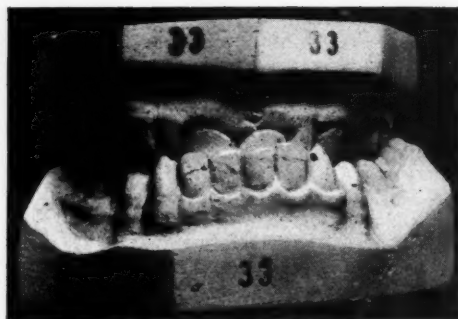


Fig. 2.

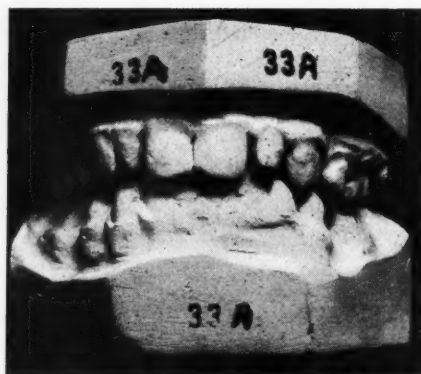


Fig. 3.

apparatus and retract the mandible as a whole, leaving the maxillary incisors alone, but the mother was anxious that I should endeavor to do it with as little apparatus as possible, so I decided to attempt to treat the case by pushing forward the maxillary incisors only and leaving the mandibular incisors entirely alone.

The apparatus used was a removable plate, saddle shaped, with Visick clasps for retention; though the plate was free of the incisors, there was a lingual wire at the necks of these teeth. To this wire I soldered an auxiliary spring, engaging the four incisors. In two months the maxillary and mandibular incisors were in correct relations and I removed the auxiliary spring.

*Transactions of British Society for the Study of Orthodontics, 1934.

I adapted the plate to act as a retainer by cutting the wire behind the incisors, bent it to the new position of the teeth and filled in the interval between the ends. This was worn for a further two months and was then discontinued. No other plate but the one described was used. The whole case necessitated only four visits after the fitting of the plate. The auxiliary spring was adjusted twice: at the third visit this spring was removed and the plate converted into a retention plate. At the fourth visit the apparatus was discarded.

The case interested me, as the maxillary teeth moved over the mandibular incisors so easily: the bite was not opened at any period. I was a little afraid that the maxillary incisors might look protrusive when they were in front of the mandibular ones if nothing was done to retract the latter, but this is not particularly noticeable.

DISCUSSION

The *President* said that he had been very much interested in Mr. Catchpole's practical appliances. These cases always interested him, because he had argued that there was a pre-normal occlusion and also a pseudo prenormal occlusion. He had had a case similar to the one shown by Mr. Catchpole, in which the normal arch relationship would have been with the incisors edge to edge, but as a "bite of convenience" the child got into the way of thrusting forward the mandible and getting a good chewing surface in that manner. That type of case was treated astonishingly well by just a slight forward movement of the incisors.

Mr. Visick congratulated Mr. Catchpole on the ingenuity of his appliance and on the success he had achieved in the case. It looked like being a permanent success too, and he thought it just showed how one could be pleasantly surprised sometimes in this orthodontic work, because the results were much better than one had reason to expect. He thought the success of the appliance was due to the most ingenious spring, and he could only hope he would remember it when he got a similar case.

POSSIBLE ORTHODONTIC ASSISTANCE IN MUTILATED CASES IN CONJUNCTION WITH OR IN PREPARATION FOR PROSTHETIC RESTORATIONS

LOWRIE J. PORTER, D.D.S., NEW YORK, N. Y.

ONE of the greatest problems in orthodontics is the retention of teeth after we have obtained, as nearly as possible, the result for which we have been striving. It is one of the problems which we must necessarily face, and one over which we may have a very limited control. It is needless to say that it is often most discouraging to those who have practiced long enough, to see some of the disparaging results noted in some cases a few years after retaining appliances have been removed.

Not only is this discouraging to the orthodontist and the patient, but when the patient returns to the dentist who referred him to the orthodontist, it is also very discouraging and most embarrassing to him.

Albin Oppenheim stated in the March, 1934, issue of the *INTERNATIONAL JOURNAL OF ORTHODONTIA*: "In none of the books of orthodontia, which have appeared in the last few years, do we find proof of the statements made in them by a demonstration of *permanent* results." And again he says, "It is my definite opinion that the condition present at the time appliances are removed cannot be considered a successful result, and that only the permanency of these results (no relapse after many years) is the deciding factor of the decision: success or failure."

A. Leroy Johnson, in a paper read before the Great Lakes Society of Orthodontists in February, 1933, made this statement: "Taking into consideration the ultimate results of treatment of many cases and, also, the time and expense involved, taking everything into consideration, we must conclude that too large a percentage of our work has been of doubtful value to continue to rest our prognosis on these ideal concepts." He refers, I believe, to the ideal, perfection, or what has been called normal.

Until we know more about the etiology of malocclusion, our diagnosis and prognosis will necessarily be inaccurate and questionable, for the same etiologic factors causing the malocclusion may remain to repeat this same condition after treatment.

We sometimes believe that by early treatment we can possibly minimize these relapses, but we find such decided variations in reactions, in apparently very similar cases, that we finally must realize that it is impossible for us definitely to predict the final outcome of our cases.

We believe that habits may have deleterious effects; that muscular influences may cause marked changes after the retention period; that third molar

Read before the New York Society of Orthodontists, March, 1934.

eruptions may cause detrimental pressures; and that Nature in its normal growth may not coincide with our diagnosis and treatment.

Knowing that we often find trouble with our eventual results, even in very young patients, and also in cases which we have treated at the time which we thought ideal for treatment, it has perhaps discouraged us somewhat in the treatment of older patients.

Not only have orthodontists been skeptical about treating adults, but the dentist has also greatly hesitated in referring such cases to the orthodontist because he has seen some of his adult patients who have previously undergone orthodontic treatment whose eventual result has not been too pleasing after retaining appliances have been removed. Because of these experiences it has been more or less the general opinion among the dentists and the laity that adult cases cannot be successfully treated. We frequently have a patient ask, "What is the latest period at which orthodontic treatment can be carried on?" They often have the idea that at some certain age the bone becomes so "set" that it is an impossibility to change the positions of teeth.

Some of us believe that extensive movement of the teeth is perhaps not advisable after the child has passed the period of growth because of the possibility of eventual failure. Before that time, our success may come because we are working with a growing child and are merely stimulating or guiding growth in the direction which we believe to be normal. Our success may depend upon whether we have been working within the limits of normal growth for that individual, and whether there are habits or other abnormal influences which are going to disturb our attainments.

If a child has abnormal eyes, which are operated upon, or treated, or given corrective eye muscle exercise, etc., neither the child, nor the parent, nor the operator is greatly disturbed if that child is told to wear glasses for a long time, or perhaps for the rest of his life, in order that his eyes may remain improved by treatment.

The teeth, however, although much more subject to untoward influences, are regarded very differently. The child, the parent, and the operator expect to change the position of teeth in any way they see fit, and the teeth, in spite of the fact that they are in many cases subject to the same influences which may originally have caused the malocclusion, are then supposed to remain in their new positions with very little or no retention.

It is my opinion that this is a serious problem which could bear much thought and discussion among orthodontists. Should we recommend a long retention to insure permanent results? How can we determine the necessary length of retention? If we have not attained the result which Nature intended, are we ever going to be able to expect stability regardless of the length of retention? Is a long retention going to do harm to the teeth, to the gingival tissues, and to the normal changes of the alveolar structures in the process of growth (provided the patient has passed what we believe to be normal growth period)? Should we explain to patients when they start treatment that the final result is questionable? Should we allow patients to believe that they can reasonably expect a fairly perfect set of teeth after orthodontic treatment, or

should we tell them of the many influences which may be destructive after the work is finished? These are questions which we must consider if we are going to be fair with our patients, their dentist, and ourselves.

There are, however, many mutilated cases which are prone to have prosthetic restorations which will necessarily have to be worn indefinitely. Are these prosthetic restorations giving that patient a permanent injury to teeth, gingiva, and growth, or have they been so perfected that injury may be practically negligible? If they do harm, is this disadvantage outweighed by the advantage of having a restoration where there has previously been a loss of tooth substance? If there is no restoration, is this loss of tooth structure going to develop into tipped teeth, causing alveolar and gingival destruction, and eventual loss of adjacent teeth? If so, will not a restoration prevent this? We must, of course, remember that the ability of the dentist in making the restoration has much to do with the efficiency, comfort, and degree of resultant harm. This is also true of orthodontic mechanisms. Bands made by one operator may be protective to a tooth, while those made by another may be harbingers for decay and of constant gingival irritations. We cannot, therefore, judge all prosthesis or orthodontics as harmful just because some restoration or orthodontic appliances may have been injurious.

I mention some of these questions because there has been some doubt about the advisability of the long wearing of a retaining appliance. There is no question that rigid retention prevents the normal shifting of teeth to allow them, through Nature, to assume more ideal cusp relations with each other than is possible through artificial means. Much shifting of teeth, however, I believe, results from faulty or abnormal contact with adjacent teeth, abnormal muscular pressures, etc. It is a question, therefore, whether we are right in assuming that when, after treatment, the teeth drift back into very faulty positions of occlusion, this is a part of the plan of Nature, and that we should allow the patient to go through life in that condition, believing the malocclusion was preordained by Nature. If prosthetic restorations can be so made that they may be nonirritating and can be worn for indefinite periods without injury, would not a retaining appliance, if worn for a part of each day at least, be of service to the patient rather than allowing the case to relapse extensively because we may think that Nature so intended? If Nature did so intend, would the mouth in some cases be in a better condition if the teeth were retained in spite of Nature's intentions?

I am not referring now to cases which may relapse slightly, as Nature in its final adjustments after our treatment tends to bring the teeth into better cuspal relations than we are able to obtain. These slight rotations or crowding of mandibular anterior teeth may be a more normal relationship than we could possibly establish.

Hellman has shown the slight lingual position of mandibular lateral incisors in skulls which have been regarded to have the most perfect occlusions on record. This undoubtedly is a plan of Nature which is perfectly normal, and results in a more perfect cuspal relation than there would be if the mandibular anterior teeth were in perfect alignment in these cases.

I am not referring to those cases which stay within a reasonable range of regularity, but I am referring to those cases in which an extensive relapse occurs and could readily be expected. Patients having shorter upper lips and large tongues usually develop a maxillary protrusion. Retention of these cases is very doubtful unless growth of the lip is obtained, and this is often difficult even with perfect cooperation in the practice of myofunctional therapy. Open-bites, tongue habits, mouth-breathing, etc., present serious problems of retention. Mental suggestions, muscle exercises, rhinologic operations, etc., all help, provided we have the patient's cooperation, but we still have a serious problem in predicting eventual results. Cases of extremely narrow arches will often collapse after treatment, probably because of muscular pressure. Excessive overbite conditions are spectacular in their correction. Some will be retained in good shape, others will relapse to their original conditions. Regardless of whether this is due to muscular pressure, habits, bone density, or the will of Nature, the final result is the same, and frequently develops into gingival and alveolar destruction, and eventual loss of teeth. Are we justified in allowing such relapses if it is in our power to prevent them? Would we not render a better service in these cases by having a long or indefinite retention period? The relapse which we have called the will of Nature may have been an abnormal relapse due to some abnormality of Nature, and the end-result may be a malformation which was far from the desire of Nature.

I am not advocating anything; I am merely asking you to consider these questions in order that we may serve our patients to the best of our ability, and for their good in maintaining the best of oral health.

We often see cases of molar and premolar tipping because of necessary extractions or because of missing teeth. These cases present a problem for the dentist, for prosthetic attachments to tipped teeth may be very unsuccessful with an eventual loss of these teeth.

If the orthodontist can first correct these cases by bringing the teeth into more normal positions, it may be a great advantage to the dentist in his prosthetic restoration, and to the eventual comfort and satisfaction of the patient.

It has been the opinion that many of these cases are being neglected and are untreated because of the general belief that adults cannot be successfully treated by the orthodontist, and it is hoped that through the presentation of this paper some such cases may be aided by orthodontic treatment previous to prosthetic restorations, which might otherwise have been neglected.

I have dealt considerably with the problem of retention. There are some cases after orthodontic treatment which, through the general occlusion, may be self-retentive. For instance, if a maxillary central or lateral incisor is occluding lingually with the mandibular teeth and is carried labially to its normal position, it will tend to stay in its new position because of the occlusion, provided there is sufficient overbite. If there is not enough overbite, then there will be a tendency to relapse unless it is retained for some time, and even then its retention may be questionable. The shape of the contact points with adjacent teeth may have much to do with the permanency of results in these cases. I believe that the shape of contacts may be a more important factor in retention than we may have realized.

I have tried to lay much stress on the importance of retention, because in the treatment of mutilated cases success depends largely on retention. As an artificial restoration is essential in all mutilated cases, there is no reason why the restoration in many instances cannot also serve as a retention appliance. This, of course, will insure permanency of results, besides establishing a normal tooth restoration. Many cases in which teeth have been lost, however, have resulted in such an exaggerated malocclusion that artificial restoration may not be satisfactory until orthodontic correction has been instituted. It is in these cases in which there may be a combination of orthodontics and prosthetics that I am particularly interested in this paper.

There are three types of cases which may come under this heading:

First, Children who have lost teeth or have congenitally missing teeth which must eventually be replaced by artificial means, but who cannot have artificial restorations until they have passed the growth period.

Second, Adult cases of missing or lost teeth requiring but slight movements of teeth and who can wear restorations as soon as orthodontic treatment has been completed. Under this head there are those cases which need to be

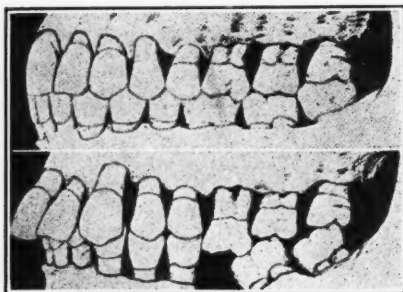


Fig. 1.

treated by orthodontic appliances, and also those who, through the use of some spring attachments to restorations, may have certain tooth movements take place and thus establish a normal function of the teeth. There are many cases in which spaces can be opened or teeth tipped by use of springs attached to a prosthetic appliance, to be followed by the addition of an artificial tooth to fill the space, and thus to act as a permanent retainer as well as a restoration.

Third, Those adult cases requiring rather extensive orthodontic treatment to be followed by permanent restorations, either fixed or removable bridgework, or artificial dentures.

There is no question that many mutilated cases will get gradually worse with a resultant harmful destruction of alveolar process if not orthodontically corrected.

The following four illustrations were loaned to me by Dr. Isador Hirschfeld.

Fig. 1 is a drawing from a bulletin of the American Academy of Periodontology, showing the tipping of teeth after extractions. This results usually in an elongation of the maxillary first molar, resultant food impaction, and bone destruction. This is usually accompanied by gingivitis and alveolar destruction mesial to the mandibular molar and distal to the mandibular premolar.

In Fig. 2 note the alveolar destruction as well as the elongation of the maxillary molar. In this case Nature has attempted to support the mandibular molars by building a denser layer of bone on the mesial surface of the root.

In Fig. 3 note the alveolar destruction mesial to the tipped maxillary first molar.



Fig. 2.



Fig. 3.

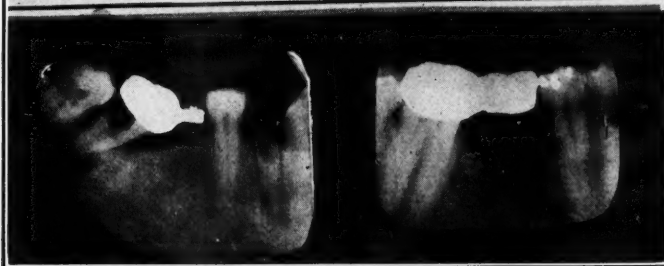


Fig. 4A.

Fig. 4B.

Fig. 4 shows two cases. Fig. 4 A shows an unsupported bridge resulting in a tipped tooth. Note the alveolar destruction mesial to this molar. Fig. 4 B shows a tooth in which tipping was prevented by a bridge. At the time of the picture this bridge had been worn for more than fifteen years. Note the splendid condition of the alveolar bone.

Then there are those cases in which the mutilation would not be harmful so far as alveolar destruction is concerned, but which should be treated purely

because of esthetics. Cases of missing lateral incisors may result in a separation of the central incisors. Orthodontic treatment of these cases results in a more successful prosthetic restoration as well as a great improvement in esthetics.

The following case reports illustrate what can be done for various cases which are included in the classes as mentioned above.

In Fig. 5 the patient was a young woman, twenty-three years old, and treated by Dr. Henry U. Barber. This young woman was an actress, greatly handicapped in her profession by missing maxillary right and left lateral incisors. In April, 1930, orthodontic treatment was started to open sufficient spaces for an artificial restoration. A maxillary lingual appliance was used to which were soldered four loop springs resting as far gingivally as possible to avoid tipping. These springs being in contact with the central incisors and canines, soon opened the spaces, and in December, 1930 (eight months later), the patient was able to have inlay attachments in the central incisors and canines to supply the missing teeth. A mandibular prosthetic piece was placed at a later date.

Fig. 6 shows an artificial restoration made for a similar case, by Dr. Forrey Getz. This appliance was made in 1912 and has been worn constantly since that time (twenty-two years). Fig. 6 shows the restoration built over the occlusal surface of the molar tooth to establish a better occlusion on one side. The canines were originally lying close to the central incisors. The orthodontic treatment was done by Dr. Frederick Stanton. It is interesting to note the many years of service rendered by this combination of orthodontic and prosthetic services.

Fig. 7 is a similar case which was treated quite differently. Maxillary lateral incisors and mandibular right second premolar were congenitally missing. Child was ten years of age. As the mandibular right deciduous molar roots were well formed and did not show a tendency to absorb, this tooth was not removed. After some study, I decided to close the space for the lateral incisor space on the right side, and to open the space on the left side, eventually placing an artificial restoration. The tip of the canine was ground to resemble a lateral incisor as nearly as possible. As the child was not then old enough to have a permanent restoration, a facing was placed on a lingual appliance.

Fig. 8 shows the restoration and retainer which served for a long time. The patient was so pleased with the appliance that it was eight years before she would have a permanent restoration. The occlusal view shows the lateral incisor attached to the lingual appliance, the side section supported to the palatal bar.

Fig. 9 shows a case of accidental loss of a permanent central incisor in a child twelve years old. Note how the space had closed from the lack of a space retainer. Space for the central incisor was opened with a lingual appliance and auxiliary springs. A Steel's facing was then attached to the lingual appliance and worn until permanent restoration could be inserted.

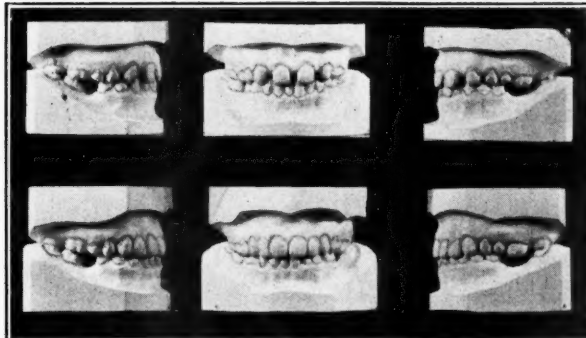


Fig. 5.

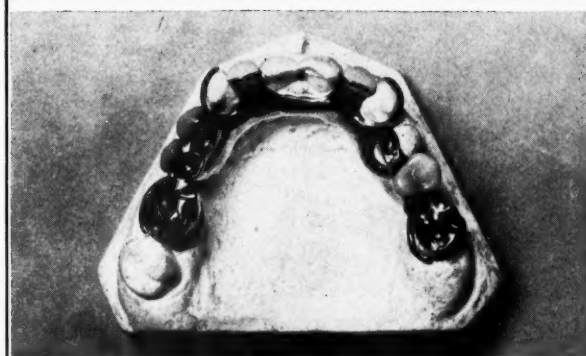


Fig. 6.

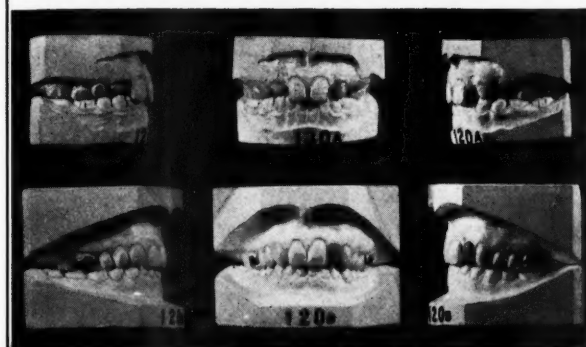


Fig. 7.

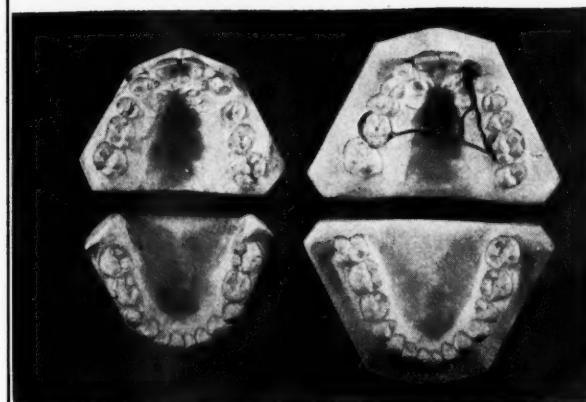


Fig. 8.

Fig. 10 shows the case of a young woman, aged twenty-eight years, who presented apparently a mandibular protrusion combined with a premaxillary retrusion. This condition was claimed to have developed largely after the loss of the maxillary left first molar. Note the distal drifting of the maxillary premolars and canine, and the mesial drifting of the molar. The mandibular right extractions were allowing an elongation of the maxillary right first molar. The case was treated by the use of a maxillary lingual appliance designed to carry the left premolar and anterior teeth forward. In conjunction with this, there was a mandibular labial appliance for the use of intermaxillary elastics. After the teeth had been changed to a fairly normal mesiodistal relation, there was sufficient overbite to aid greatly in the retention. A bridge was then placed on the right mandibular teeth, and at a later date a bridge was also placed on the maxillary right side. It did not seem advisable at her age to carry the maxillary left second molar forward to close the space of the lost first molar.

Fig. 11 shows a young lady, seventeen years of age, who was treated by Dr. Sidney Reisner. This is similar to the case mentioned above except that the tooth lost was a maxillary left central incisor, which had been extracted at eleven years of age because of apical infection. In the intervening years the maxillary arch contracted somewhat, partially closing the central incisor's space, and the mandibular prominence was said to have increased. Orthodontic treatment was sought because of a resultant speech defect and for esthetic reasons. A maxillary lingual appliance was inserted in August, 1929, together with a mandibular labial appliance for intermaxillary elastics. The following June a band was cemented on the right central incisor, and a Steel's backing and facing attached to this. After ten months the band was removed, and a Carmichael three-quarter crown was placed in the central incisor, with a dummy central incisor, allowing a slight flange to rest on the lingual of the left lateral.

The next case, Fig. 12, was a young woman twenty-eight years of age. The mandibular left first premolar occluded buccally to the maxillary teeth. The continual traumatism was loosening this tooth and causing a gingival irritation. Eventual loss of the tooth was predicted by the dentist. A mandibular left molar band was placed in June, 1933. To this was attached a short piece of 0.045 inch wire coming forward to the canine. To the 0.045 inch wire was attached a 0.015 inch spring wire coiled about the lingual appliance. The premolar was banded and ligated to this light spring wire. After four months' treatment the tooth was in normal relation with the maxillary teeth. The retainer was left on for four months, after which it was removed, and through the occlusion it was self-retentive. Bridgework has not yet been placed, but the orthodontic treatment has been completed. There is not much doubt that this tooth would have been lost if it had not been treated orthodontically, and certainly the prognosis of a successful restoration is more promising.

The case shown in Fig. 13 was treated by Dr. Glenn Young. Note the mesial tipping of the mandibular right first molar. The patient was thirty-two years old. In February, 1933, a pin appliance was placed on the mandibular teeth to tip the right second molar distally. Eight months later a Hawley

retainer was placed to hold the tooth in its upright position. As the maxillary first molar had elongated, from the loss of the mandibular first molar, gutta-percha was placed on the Hawley retainer for this tooth to strike and depress. The gutta-percha was gradually added to. The case was then ready for bridge-work.

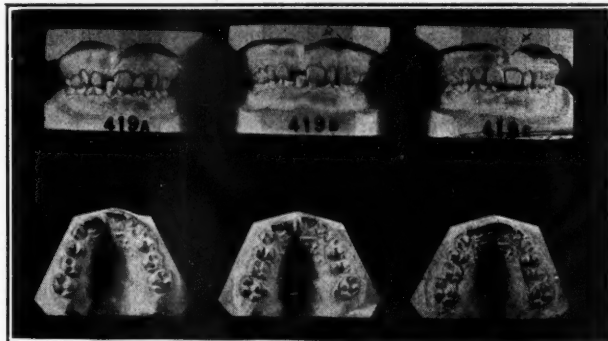


Fig. 9.

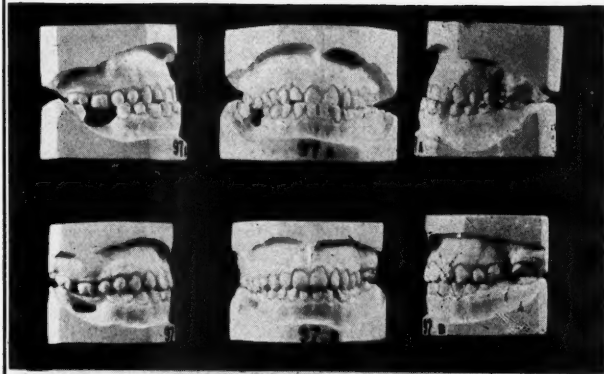


Fig. 10.

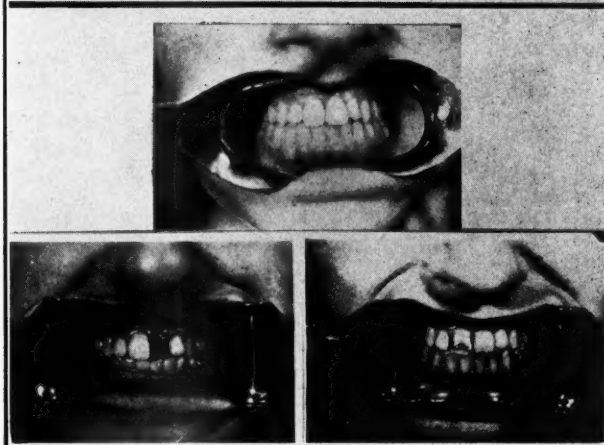


Fig. 11.

I wish to call particular attention to the next case, Fig. 14. It was treated by Dr. J. Lowe Young. The patient was thirty-seven years old, presented a deep overbite with retrusion of the maxillary central incisors. In May, 1927, maxillary and mandibular lingual appliances with springs were inserted to round out both arches. In November, 1927, a maxillary pin appliance was used with individual bite planes. In May, 1928, a Hawley retainer was in-

serted in the mandibular arch and a bite plane in the maxillary arch. In April, 1929, the mandibular canine was banded and a small lingual retaining appliance was placed to hold the mandibular anterior teeth. Removable bridgework was installed.

A retaining appliance may need to be worn for a long time in this case, but it is my opinion that it will be worth it.

Note the occlusal view in Fig. 15, showing the splendid result of treatment at thirty-seven years of age.

Fig. 16 is a case shown by Dr. Glenn F. Young. Patient was forty-eight years of age. Treatment was started in October, 1926. Maxillary and mandibular lingual appliances used with springs on the maxillary appliance. The maxillary left central incisor was banded for rotation.

In June, 1928, a Hawley retainer was inserted in the maxillary arch.

In January, 1932, the patient was given a gold retainer to be worn nights only.

Fig. 17 shows a boy, seventeen years of age, with cleft palate and harelip; he had a decided speech defect, and the maxillary central and right lateral incisors were missing. The maxillary right deciduous canine was in place, with the permanent canine resting above it at a decided angle. The maxillary arch had completely collapsed. The maxillary left and mandibular right first molars had been lost. There was a tendency toward protrusion of the mandibular anterior teeth. A maxillary lingual appliance with auxiliary springs was used for lateral development and shifting of molars. A mandibular labial appliance with auxiliary springs was used to retrude the anterior teeth and to move the second molar forward. After eighteen months' treatment sufficient development had been accomplished. A maxillary vulcanite plate was inserted to cover the opening in the hard palate and to supply maxillary central incisors. The two central incisors were made extra long to bite well over the mandibular anterior teeth to serve better as a retaining appliance for both maxillary and mandibular teeth. This will later be replaced by a permanent prosthetic appliance which will also be improved esthetically. With speech correction, instructions, and practice, the boy is now able to speak well, and his general attitude toward life has greatly improved.

Fig. 18 is of a man thirty-two years of age. The maxillary right and left lateral incisors occlude lingually to mandibular teeth. The mandibular left canine occludes labially to the maxillary teeth. The maxillary right first and second premolars have been extracted. The maxillary left second premolar is missing, and the left first molar is in lingual occlusion. A maxillary lingual appliance was used with auxiliary springs to the lateral incisors. A mandibular lingual appliance was used with auxiliary spring, ligated to the mandibular left canine. Cast B was made after eleven months of treatment. The maxillary denture was then inserted to supply the maxillary right premolar, and acted as a permanent retainer to the lateral incisors. The denture was secured by clasps to the maxillary right canine and molar and to the maxillary left premolar. It seemed best to leave the maxillary left first molar in lingual occlusion. Esthetic appearance and traumatism were greatly benefited.

The last patient, Fig. 19, was thirty-eight years old. There were a missing maxillary left lateral incisor and peg-shaped maxillary right lateral incisor.

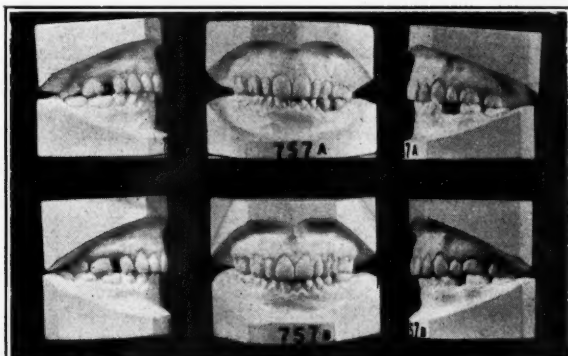


Fig. 12.

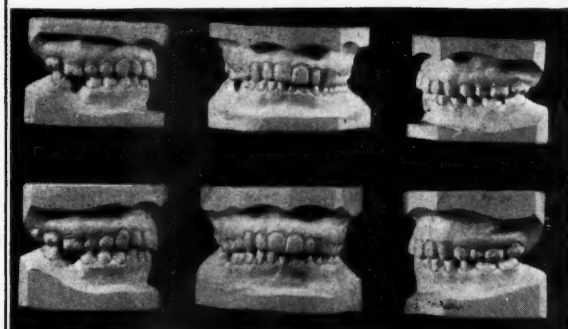


Fig. 13.

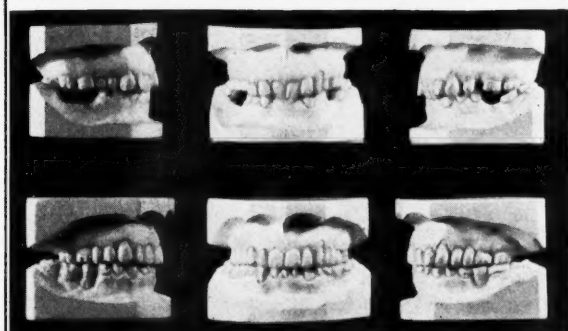


Fig. 14.

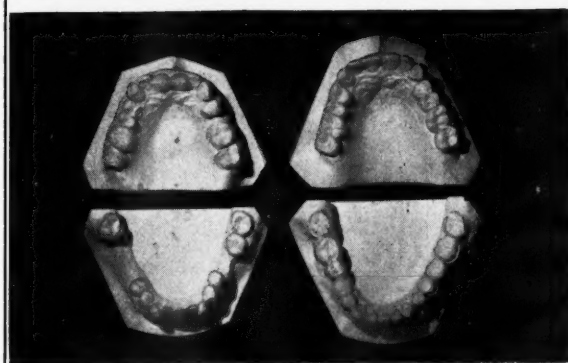


Fig. 15.

The mandibular left lateral incisor was crowded lingually, with the mandibular right canine biting labially to the maxillary teeth. The mandibular left lateral incisor was extracted, after which the mandibular canine was moved lingually

by the use of a lingual appliance and auxiliary spring ligated to the canine. A maxillary vulcanite plate was used to raise the bite temporarily while the canine was being "jumped" over.

Fig. 16.

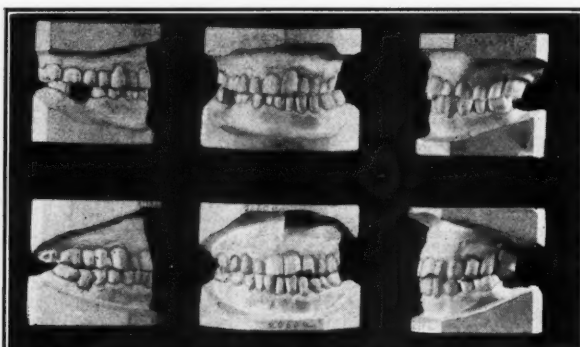


Fig. 17.

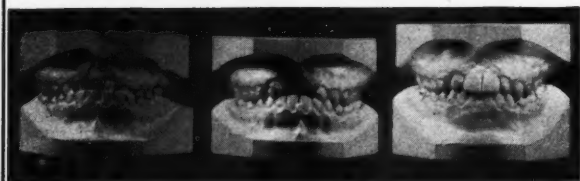


Fig. 18.

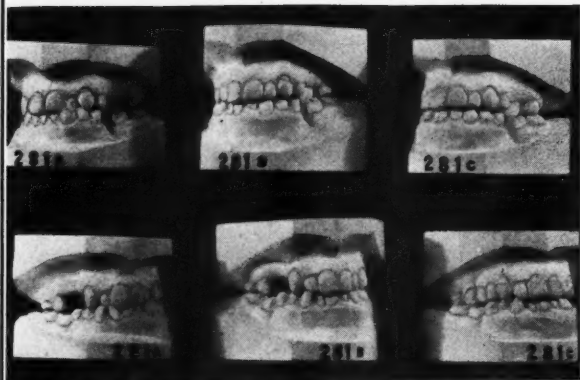


Fig. 19.



The prosthetic restoration consisted only of a maxillary right jacket crown for the peg-shaped lateral incisor. The canine movements were self-retentive from occlusion.

It is my belief that many adult cases could be decidedly benefited by orthodontic treatment if the laity and the dentists appreciated the possibilities of these services. Some of these cases require a rather permanent retention; but, as most mutilated cases require a restoration of some type, these restorations can often also serve as retainers.

I trust through this presentation that some cases now being neglected may have the benefit of orthodontic services; that there may be a better understanding of the limitations of orthodontic successes, either with or without retention; and that we may freely discuss this subject in order that we may better know how to serve our patients to the best of our ability, and to our patients' comfort and pleasure.

The suggestions which I have made have been purely from observation. They are not arbitrary on my part, and I invite free and open discussion both pro and con, knowing that we are all working toward that same end, our best and most intelligent service to humanity.

A CASE OF ANTEROCLUSION TREATED AT AN EARLY AGE*

GEORGE R. MOORE, D.D.S., ANN ARBOR, MICH.

HISTORY.—The patient, a girl aged three years and three months, was brought to the office for the first time on June 21, 1926. Her ancestry is Anglo-American. Her father has a rather badly mutilated mouth with evidences, however, of having had normally related arches. The mother possesses an anteroclusion of which she has been conscious during practically her whole life and which she thinks she has reduced somewhat through her consciousness of it. She was not able to afford orthodontic treatment at the right age. So far as I am able to determine, no other relatives exhibit facial abnormalities. The mother reports for this child a normal prenatal period, normal birth, and normal early infancy. She was breast fed for the first six months, and her nutrition, rest, and medical care had been taken care of as one would expect the more conscientious parent to attend to such matters. The child was not subject to recurrent colds. Her tonsils and adenoid tissue showed no hypertrophy. Her height and weight were normal for her age.

Attributed Etiology.—In spite of the fact that the mother exhibits a similar condition of anteroclusion and there would be ample opportunity for one to develop the theory that this is evidence of the operations of heredity, I was able to detect in this case at the time it presented, a habit so well established that I am rather inclined to attribute this malocclusion directly to it. The habit consisted of sucking the upper lip and, after protruding the tongue anterior to the maxillary incisors, stroking them in a lingual direction. It is very possible that this habit was started before the eruption of the deciduous incisors, whose eruption was very markedly influenced. Undoubtedly the habit was either started in the first place or encouraged to continue because of the fact that the mother presented the same form of habit. It was largely a case of mimicry.

Diagnosis.—Bilateral anteroclusion of mandibular arch to maxillary arch, unaccompanied by abnormal growth factors.

Treatment.—On account of the early age of this patient it was considered advisable not to be too much concerned with the malrelation of arches exhibited in the deciduous molar regions. The object in treatment, therefore, was merely to change the relationship of maxillary incisors to the mandibular incisors. The maxillary deciduous canines were not in lingual relationship. They were therefore banded and a lingual 0.030 inch wire was soldered to the left deciduous canine and fitted into a horizontal round closed-end tube on the maxillary right deciduous canine. Before this appliance was cemented, an 0.018 inch reflex spring was adjusted which applied its stress to all four of the maxillary incisors. This appliance was cemented into the mouth on June 22, 1926, recemented on July 19 after slight bending from the excursion of food and perhaps a little

*Presented to the American Board of Orthodontia.

Fig. 1.



Fig. 2.

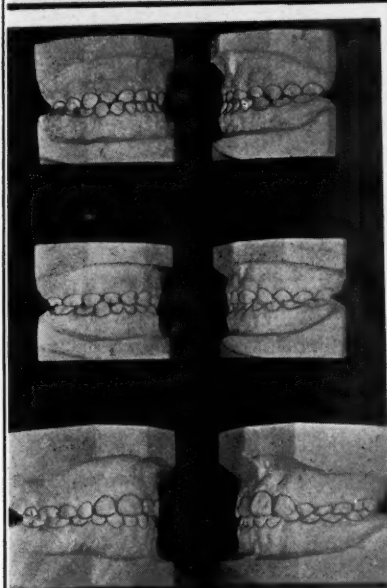


Fig. 3.

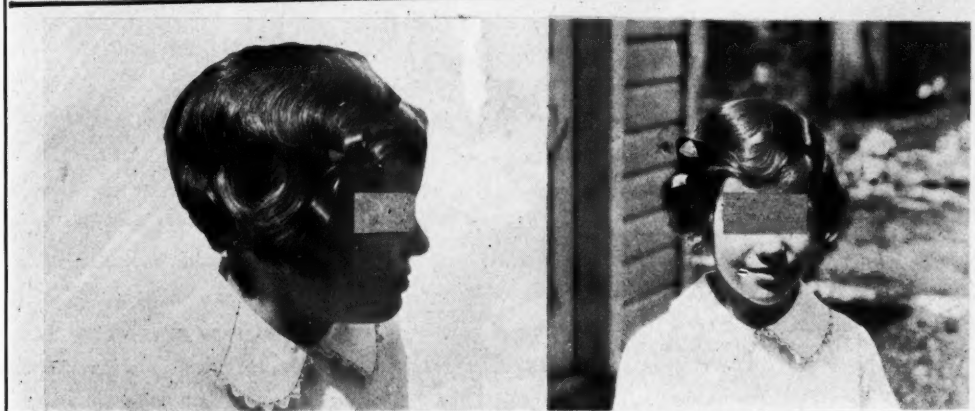


Fig. 4.

carelessness on the part of this three-year-old patient, and finally removed on August 28 of the same year. No other appliance has ever been used in her mouth.

Results.—Fig. 1 shows, from left to right, a photograph of the mother and child when the child was three months old. The mother's profile shows quite clearly her own facial deformity. The other three photographs of the child in this series show her tendency to manipulate the lip and facial muscles. In the third of the series the fourteen-month-old child is seen definitely protruding her mandibular arch, and in the fourth pose she is caught by the camera in the act of sucking her upper lip. Unfortunately, this last exposure is not very clear.

Fig. 2 shows casts made from plaster impressions taken before treatment, June 21, 1926; September 20, 1926, nearly one month after appliances were removed; and December 30, 1931, five years after appliances were removed.

Fig. 3 shows radiographs taken in December, 1931, exhibiting a normally developing dentition.

Fig. 4 shows front and profile views taken in April, 1932, with apparently no evidence of the presence of an abnormal growth factor.

Prognosis.—After having carefully observed this patient for five years since treatment and having seen the occlusion gradually develop in a perfectly normal way, I feel that the prognosis is very favorable.

Observations and Conclusions.—If I were to treat this case again, I might not use orthodontic appliances at all, in spite of the fact that this case required only two months and six days of active treatment, which is certainly not objectionable. Recently I had the opportunity of seeing a rubber stimulator designed by G. Vernon Fisk of Toronto, which would be very effective in the hands of the conscientious mother for treatment of this type of case.

SOLDERING OF CHROME FOR ORTHODONTIC USE

A PRACTICAL PROCEDURE

A. C. MOGLER, D.D.S., AND E. V. HOLESTINE, D.D.S., ST. LOUIS, MO.

THE chrome alloys in order to attain a permanent place in orthodontics must have something to recommend them other than their price. The following paragraph is quoted from an editorial in the *Journal of the American Dental Association*, August, 1933.

"There is one thing that should be emphasized in connection with this and all similar questions, and that is the fact that in the use of materials necessary for the successful practice of dentistry, the element of cost should be secondary to that of serviceability."

The relative difference in price between chrome and gold alloys makes the chrome group an attractive substitute for the higher priced materials, provided only that the lower priced materials are as dependable as those of the precious metal group.

A comparison of the physical properties of chrome and gold alloys shows the chrome alloys to have many advantages over the precious metal group. Chrome has greater tensile strength. It is extremely hard and possesses a higher resistance to fatigue. These properties allow for the use of smaller gauge wires, and less frequent adjustment of appliances is necessary. Chrome does not tarnish in the mouth and is easily tolerated by the tissues. Notwithstanding these superior physical properties and the extremely low cost, there is one property which has kept chrome alloy out of orthodontia: that is the difficulty with which these materials are soldered.

Over a period of almost three years in experimenting and working with the soldering of chrome alloys, the German product Wipla, the American 18-8 stainless steel, and all other alloys obtainable were used. The results were discouraging. Appliances that apparently were well soldered in the laboratory would break down after being in the mouth anywhere from a few weeks to several months. Appliances soldered with Wipla solder were apparently well joined, but so much heat was required to flow the solder that all or most of the elasticity was removed from the wire, and it is not practicable to retemper chrome wire once it has been annealed.

For about one and one-half years the experiments have been carried on using a different form of chrome alloy, known as Kroloy, and with it has been used the Kroloy solder. The results with this new material have been entirely satisfactory. Appliances do not break up at the solder joints, and breakages have been much fewer than when gold alloys were used.

The soldering technic is only slightly different from that used in gold soldering. It is very important that all parts to be soldered are absolutely clean. To make a satisfactory joint the parts must be in contact. In soldering it is well to remember that the solder and the wire do not go together to form a new alloy at the joint as in gold soldering, but that the strength of the joint depends upon the adhesion of the solder to the two parts being soldered.

Before the heat is brought on the case, the parts to be soldered should be carefully coated with either Kroloy flux or Ney's gold solder flux. Then the parts are warmed with the blowpipe until the flux fuses. Without moving the flame from the place to be soldered, apply the solder, using only enough heat to make it flow. Finish the soldering before the blowpipe is removed. *After the case is heated, the flame should not be removed until the soldering operation is completed, and the two pieces must be held in contact until the solder has completely cooled.* Care should be exercised not to use too much heat. If the case is overheated, the solder bubbles and the joint will contain air holes. If this does happen, coat again with flux and apply heat very carefully, just enough to smooth out the surface of the solder. Of course, a great excess of heat will anneal the wire. (The annealing point of Kroloy is 1580° F.) If, in the process of soldering, the wire does become annealed, it may be retempered by cold working with pliers and by polishing.

In attaching auxiliary springs to the arch wire a small amount of solder is flowed on the arch wire at the point at which the spring is to be attached. In like manner solder is flowed on the auxiliary wire; then the two pieces of solder are flowed together. Care must be taken that the solder flows completely around the auxiliary wire. Because of the small gauge auxiliary wire used, 0.016 inch, the spring wire is usually annealed near the solder joint. For this reason it is necessary to wrap the auxiliary wires at least once around the arch wire. In the soldering of all auxiliary wires and tubes it is necessary for the solder to flow completely around the tube or wire.

Kroloy appliances must be polished, and they cannot be pickled successfully. The polishing is essentially the same as that for gold appliances; and once a high luster polish has been put on an appliance, it will retain the polish in the mouth without oxidation or corrosion.

So far experience with the material shows that certain chromes deserve the serious consideration of the orthodontist on their merits alone, regardless of their cost, and that the soldering of this material is entirely successful and practicable if a careful, painstaking, proved technic is employed.

Department of Dentistry for Children

OPERATIVE DENTISTRY FOR CHILDREN

WITH ESPECIAL ATTENTION TO CAVITY PREPARATION IN THE DECIDUOUS TEETH

WALTER T. McFALL, D.D.S., ATLANTA, GA.

IF THE dental profession ever fills its rightful claim to attention and importance, it must give more adequate consideration and service to the child patient. Every outstanding professional man works untiringly to prevent and eliminate the cause and the need for his chosen life work. Dentistry for children is not a new subject in the annals of dental history, but it is a phase of the profession's obligation which has been indifferently tolerated, temporarily treated, professionally apologized for, and more often, honestly or dishonestly, fabricated about, in discussions with the laity. True, there has been little help to be gained from textbooks or from dental literature except in the last few years. The dental college undergraduate and graduate experience have proved almost worthless and a barren source of workable, helpful knowledge until some five to eight years ago. I am happy to see the profession come to this day when we, as doctors of dental surgery, cease to theorize and philosophize, but actually study, plan and passionately use what we can and do know. As professional men, who have a large part in shaping human destiny and adding to the length, comfort, and enjoyment of life, we have no alternative in this matter but honestly and adequately to inform ourselves, and conscientiously to serve the child. We are bound by every reason to work for children. We believe children to be our greatest asset and the hope of our civilization. We are the only professional group authorized, licensed, and protected by law to furnish this much needed and important service.

The dental profession has made tremendous strides in the last century, and it is but fitting that the theme for this meeting should be "The transition of dentistry from a craft to a highly specialized profession." Today we are not craftsmen, tradesmen, plodders in a workaday world, but men with a vision who are sought out as leaders to help others maintain and obtain good health. We have a weighty responsibility, one each man must answer for himself, for dentistry has ceased to be a craft, a mechanical art, and is respected because dentists can and do prevent disease, and remedy many of the alarming pathologic conditions afflicting the people. They are able to restore to health, comfort, and beauty the significant portal to the human body, the mouth and its component parts. "Little can be accomplished for grown-up people; the intelligent

Read before the New York Dental Centennial, Dec. 6, 1934.

man begins with the child" (Goethe). Many in the dental profession have lately learned to their sorrow and material unhappiness that they have to work for children if they build, hold, and succeed in this profession and business of dentistry. A large group of dentists have seen their practices disappear because adults grow older and change, children grow older and love, provide, and produce. The dentist must work for the child for the child's sake, the profession's sake, and for his own sake.

I am fully cognizant of why the dental profession has not served children adequately in the past. The dental colleges failed to teach the undergraduate student, and even now few dental colleges, if any, offer a course in postgraduate instruction which is helpful and worth while on dentistry for children. The average dentist has not received much help from his dental college or from dental literature in psychology, economics, courses in education, teaching, and the vast horde of differences between the child and the adult. Only three recognized textbooks have appeared, and these three have come in the last ten years, giving real helpful suggestions on this important phase of the profession's work with children. Local, district, state, and national dental societies have only recently given attention to this subject and have sought out and invited the more experienced and successful members of the profession to help the remainder of us. The American Society for the Promotion of Dentistry for Children, the only national group working in organized dentistry, was started only nine years ago. Less than 10 per cent of the State Boards of Dental Examiners in the country ask questions pertaining to dentistry for children, of their candidates for license to practice dentistry. Frankly, one is forced to admit that the average dentist has been rather hopelessly at sea and pathetically helpless to obtain practical, workable, successful principles and methods of practice concerning the care of the child in dentistry. Search all the textbooks you used in dental college; read again the literature of your college days; and I believe you will agree with me, if you graduated ten years ago or longer, that there is not much of actual, positive benefit or help to be gained.

There is need for every general practitioner in dentistry to become better informed on serving the child patient, for there are fewer than two hundred full-time specialists in pedodontia or full-time dentistry for children in America. This is every dentist's responsibility and obligation, not just a few specially trained men and women who are succeeding and enjoying even during these times a busy and appreciative clientele who pay, cooperate, and work with the dentist for the child's good and the dentist's success.

Through the endeavors of the medical, dental, and nursing professions, the dental health educational programs and materials have attracted and interested many thousands. The splendid health attention and meetings of the National Congress of Parents and Teachers, the work in civic clubs, social, and welfare groups, the myriad advertisements, radio broadcasts, and the far-reaching and valuable work done by the National Educational Association members through the public schools of the land which have declared that the teaching and practical inculcation and utilization of health shall be the first objective and essentially basic fundamental of present-day education, these and many others

have helped to focus attention sharply on this great problem of the dentist and the profession. As professional men, we are more than workers with our hands; we must become better teachers and better citizens, and do our most to give boys and girls everywhere their rightful chance to become healthy, happy, and useful. We are guardians of a nation's wealth; either we help progress and our people, or by our very negligence we hinder and retard. The laity is becoming better informed each day; public health has already taught and shown the average child much more than the child's parent knew at twice the child's age. The dentist must ever be the hub about which dental service revolves. Your patients can and will know largely what you tell them, what professional services you render them; how you serve the child patient sometimes has far-reaching results.

Josh Billings has said, "It ain't so much what folks don't know as 'tis, they know so much what ain't so." How true this is of the average dentist concerning children. I wish to take up here the subject of operative dentistry for children with especial emphasis on deciduous teeth. This is a big subject, and, of course, can be touched only lightly in the scope of a short paper. I shall confine myself entirely to the subject as it concerns deciduous teeth and shall not discuss the important subjects of child management, office procedure, prophylaxis, home care, dietary control, economics, space maintainers, extractions, anesthetics, root canal therapy, filling materials, and the many other necessary essential avenues to success in dentistry for children. The sixth year molar, or the first permanent molar, which I consider the most important and the most neglected of all the teeth, will be discussed only as it concerns the twenty deciduous teeth. It is just as necessary to have a thorough understanding of operative dentistry for children as it is to succeed with the practice of dentistry for adults by understanding the important subject of operative dentistry and its many ramifications. Many of the reasons why dentists do not like to work for or do not succeed with children are explained by this very important phase of the subject. Child management, the failure to understand and to insert fillings successfully for children in deciduous teeth, the unhappy and often grief-provoking results after a dentist has honestly done his best for the child predicated this service on his experience with his adult patient and often having an abscessed tooth for the child patient, and last, the fact that the dental profession has so long misinformed or failed the laity in regard to the child patient until it becomes increasingly difficult to obtain an honest and just fee for the professional services rendered to child patients—all of these have made work with children unsatisfactory, disagreeable, distasteful, and undesirable. Many of the above reasons can be eliminated by following the points I shall try to make in this paper. Compensation will be forthcoming when the dentist has learned to handle children better and to perform his operations so that time, effort, and the end-result will produce a profit for both the child and the dentist.

Operative dentistry for children will of course treat of the preservation of the natural teeth and their supporting tissues. We will of necessity be concerned with the operations that are performed upon the deciduous teeth

themselves, wherein we shall strive to prevent the ingress of disease, to correct damage done by accident, caries, or wear, and to attempt to check and remedy the evil resulting therefrom. I shall briefly discuss (1) diagnosis, (2) prevention, and (3) restoration.

Operative dentistry for children and especially for deciduous teeth follows somewhat the general fundamental rules of good dentistry, but there are many differences which, if unheeded, always assure failure. Children are different and adults in many respects: they are finer, truer, more responsive, and more appreciative. No thinking man likes to follow empiricism blindly, and many of us have proved ourselves to be followers only. We scoff at research and proved experiment and say, "Oh, that cannot be, because I never did it that way." We admit failure and follow blindly some other fellow's lead because we are required to study, dig, and honestly stir ourselves if we dare succeed.

The deciduous (baby, temporary, milk, or first) teeth, with the exception of the four first deciduous molars, are very similar in form, lobal make-up, and structure to the permanent teeth. The four first deciduous molars are not similar to any tooth found in the permanent set of teeth. The first deciduous molars do resemble some little, certain types of premolars, but certainly there appear many variations from this similarity. Attention should be called to the following differences between the permanent teeth and the deciduous teeth:

1. There are twenty deciduous teeth, each having five surfaces; this makes a total of one hundred surfaces to be examined and given careful attention. There are thirty-two permanent teeth, each having five surfaces; this makes one hundred and sixty surfaces to be examined and given careful attention. The deciduous set of twenty teeth contains all the teeth found in the permanent set except the eight premolars and the four third molars. The names of the deciduous teeth are the same as the names of the permanent teeth with the above exceptions.

2. The deciduous teeth all begin their formation before the birth of the child, they are formed and are to be used during the most trying and important stage of life. For it is during childhood that most of the infectious and contagious diseases are contracted, the nervous and digestive systems are in a state of growth, progression, and enlargement, more so than at any other time in life, and the deciduous teeth have an all important part to play in these two great systems of the body. Only the four first permanent molars of the permanent teeth begin their formation before the birth of the individual. These same first permanent molars have usually erupted before any of the deciduous teeth are lost; this explains why so many parents disregard these most important teeth.

3. The twenty deciduous teeth are much smaller in size than the permanent teeth.

4. The crowns of the deciduous teeth are shorter in relation to width, and the buccal and lingual surfaces of the molars are inclined much more toward the occlusal surface and are therefore proportionately narrower than the permanent molars.

5. The roots of deciduous teeth are longer and more divergent than are the roots of permanent teeth. The deciduous molar roots always resorb naturally in the following manner: the mesial side of the distal root, the distal side of the mesial root, the buccal side of the palatal or lingual root. This is important in root canal treatment and in extractions of deciduous molars.

6. The enamel of deciduous teeth is whiter, of coarser texture, and more brittle than the enamel of permanent teeth. The dentin is softer in the deciduous teeth than in the permanent teeth.

7. The pulp chambers and the root canals of deciduous teeth are much larger than the pulp chambers and root canals of permanent teeth. The walls covering and protecting the pulp in both the crown and the roots are much thinner in the deciduous teeth than in the permanent teeth.

8. Deciduous teeth are more bell-shaped and are more convergent at the cervicoenamel line, thereby causing a most important factor and consideration in cavity preparation, attention to the gum, the contact point, and the beginning of caries on the proximal surface of deciduous teeth.

9. Cavities can be prepared deeper occlusogingivally in deciduous molars than in permanent molars, in proportion to their size. Any cavity made by caries, accident, or prepared deeper than 1 mm. in the gingivoproximal area extending toward the pulpal wall will certainly endanger the pulp of a deciduous molar, because of its shape, unusual converging and constricted neck, the large size of the deciduous pulp, and the softness of the underlying dentin.

10. Always try to remove all the decay in all the surfaces of deciduous teeth, but never be guilty of accidentally exposing a deciduous pulp. It is better to use hand instruments when the pulpal wall is approached or approximated. Examination, diagnosis, and prognosis are most essential to success in serving the child patient.

11. Deciduous teeth have different contacts and higher actual gum lines than do permanent teeth. Childhood is the stage of the greatest growth period, the age of completed calcification of all deciduous teeth, the age of beginning calcification of all the permanent teeth except the four first permanent molars, and the age when all the deciduous teeth erupt, are resorbed, shed, and replaced by the newly formed succeeding permanent teeth.

12. Contact points in deciduous teeth are important, but not so important as in permanent teeth. The periods of interstitial growth normally and naturally occur in the deciduous tooth age. More attention is and can be given to the individual deciduous tooth as a separate entity than can be given to any individual permanent tooth. No individual deciduous tooth is supposed to serve longer in the child's mouth than seven to nine years, but each is supposed to serve in a healthful, comfortable condition until its succeeding permanent successor naturally and normally replaces it in that particular mouth. It is the dentist's duty to assist in this ideal.

13. The depth and the degree of caries in deciduous teeth must be evaluated and understood by both the dentist and the parent. Dentists can do their best on each operation only if the child cooperates and if the condition in the child's

mouth is seen early, before serious and doubtful outcomes are apparent. Class I caries—any caries involving just the enamel. Class II caries—any caries 1 mm. deep in the dentin on any tooth surface. Class III caries—any caries at least 2 mm. deep in the dentin, whether there has been pain, a toothache or not. Class IV—any caries deeper than Class III that may or may not involve the pulp. Class V—a definite pulp involvement. (This classification of caries considers the finished cavity preparation with preliminary explanation to the parent or the guardian.)

May I suggest some worth-while measures for better cavity preparation in deciduous teeth. Before a child's mouth can actually be examined, a conscientious, oral prophylactic treatment must be completed. Remember that there are one hundred surfaces in a deciduous dentition to be examined and cleaned. An oral prophylaxis is the most important single service the dentist can perform for a child patient, and its many advantages are manifold. After the oral prophylactic treatment, which covers vastly more than cleaning the teeth, we are ready to proceed with the first part of the diagnosis—the inspection and examination. Good lights both in the office and in the mouth are necessary. Explorers which are needle sharp, mirrors which are clear and unblemished, plaster models, dental floss, cotton rolls, hydrogen peroxide and alcohol, air, binocular loupes, and finally bitewing films and intraoral x-ray pictures will all be necessary to a mouth examination successfully and properly made for a child. As the cavities are discovered, the parent should be close by to see for himself and to be told of the importance of caries, the greatest disease of the human family. The degree of caries, the type of caries, the age, health, type of tooth of the child being examined, and the child's past history, present living conditions, and the mouth as a whole, influence considerably the diagnosis. For explanation to the parents and children, I use charts, models, dissected teeth, and pictorial displays, for I long ago learned that one picture is worth an hour's technical explanation in words. A chart shows the stages and types of decay, and I frankly tell the parent (not in the child's hearing) when the prognosis is doubtful, and I believe the prognosis is doubtful in every deciduous tooth beyond the Class II classification of caries. By being frank, fair, and honest with the parent and child, I am able to build up appreciation and confidence in the parents and the patient. I am better able to render a satisfactory professional service for the health of the child and for my own reputation and compensation. I avoid future grief from abscessed teeth, for I tell the parent then and there of any tooth of which I am the least doubtful. In these cases, I proceed to examine by x-ray more carefully, to establish carefully the correct depth of caries and to insert an anodyne, sedative nonconductor medicament as a treatment, keeping this tooth under observation from six weeks to six months or longer before attempting to fill it permanently.

The age of the child means much in cavity preparation in deciduous teeth. I attempt to save every healthy deciduous tooth until what I believe is normal shedding time in that particular mouth. I usually follow the rule of mandibular incisors (central incisors) 6 to 6½, maxillary central incisors 6½ to 7, mandib-

ular lateral incisors 7 to 7½, maxillary lateral incisors 7½ to 8, first deciduous molars 9½ to 10½, canines 10½ to 12, and second molars 11 to 12½. Many things change this rule: sex, mentality, diet, sickness, accidents, general health, and cooperation of the child and home. These are approximate ages, of course.

In giving an oral prophylactic treatment, I always polish all surfaces of every tooth. This polishing includes all fillings, all deep and questionable grooves, or decalcified areas and deep pits. If I can polish out a deep groove or pit which does not penetrate the enamel or disk a tooth without impairing the mesiodistal relationship or causing perchance a food wedge or greater susceptibility to the surfaces exposed, I always prefer to do this. I almost always polish the buccal and lingual grooves of molars actually to establish the extent of the carious area, to be assured of proper and sufficient extension and yet to conserve all tooth structure possible. No cavity, doubtful or suggestive area such as an unpolished deep pit or groove which may in the future break down, ever escapes my immediate attention. No fissure or other structural defect is too minute to receive a permanent filling at once. We should all stop telling patients and their parents that we can prevent caries, for we cannot because we do not know what causes caries in every instance. We can, however, assure parents and patients that we can spare the child the torment of toothache and very largely assist in saving his deciduous teeth if we are permitted to see the child early enough in life, regular and often.

Deciduous teeth can and should be filled for permanence if they are filled at all. We should not give the laity the impression that we have filled a tooth if gutta-percha or temporary stopping is used. We should distinctly explain that all cements are treatments, not fillings; then we could in many instances avoid the patient's returning to a reception room full of other patients and proclaiming, "Mary's filling fell out again, doctor." Fillings are gold foil, inlays, alloy, tin foil, or some of the combination metals for casting. Every cavity, no matter how simple, should be sterilized before it is filled if it is a deciduous tooth. In any cavity as deep or deeper than Class II caries, besides being sterilized, some form of anodyne, sedative, nonconductor medicament should be inserted between the pulpal wall and the filling. Cement itself is not always safe or sufficient in this instance. In cavities deeper than Class II caries, one should know the drug, chemical or medicament one is using as a sterilizing agent and should very carefully and definitely prove that he does know what he may reasonably expect from the sterilizing of the cavity.

The proper use and proper kind of matrix are almost as important in deciduous teeth as is the care given cavity preparation. A matrix properly made and adapted is a vital factor in producing a successful filling in a deciduous tooth. Because of the difference in the anatomy of the deciduous crowns and the difference in gum line, matrices must always be given important consideration. We aim to reproduce the lost surface of a complex cavity. This means, of course, proper contour, carving, polish, and restoration of lost parts which will protect and insure the defenseless tissues,

In those teeth in which the carious smooth surface, not involving the marginal ridge, does not approximate another tooth or even where the area does approximate another tooth which has a cavity or a filling to be inserted, I prepare the cavity on the surface so involved first, boldly extending the cavity outline to self-cleansing, immune areas, fill and contour and polish before inserting the filling in the approximating tooth. The only exceptions to this are in cases in which the distal surface of the second deciduous molar is decalcified or carious after the first permanent molar has erupted, and in the mesial or distal surface of the first permanent molar after the premolar or the second permanent molar has erupted. In both these latter instances a carefully made inlay is the best protection against recurrent decay and a new cavity in the approximating tooth. The cavity preparation, of course, is complex in both these latter instances, whereas in the first the cavity is entirely on the smooth surface provided the marginal ridge is not involved.

Complex cavities in deciduous molars must always have a broad step between the occlusal surface and the proximal side, for these fillings must have a mass of metal if they are to be retained and a broad chewing surface with at least a carved marginal ridge on the occlusal surface of the finished filling.

Every good dentist uses in operative dentistry clean, new, sharp burs, sharp spoons, chisels, smooth stones, steady handpieces, and accomplishes as much as possible with each instrument or bur before it is replaced. Use as few instruments as possible, have all you can possibly need handy or easily accessible. The whole floor of occlusal cavities need not be so deep as the deepest caries, nor should the gingivoproximal floor be so deep as the deepest caries. The areas to watch for exposures in deciduous molars are about 1 mm. to 2 mm. on the pulpal wall, as this wall approaches the buccal and the lingual surfaces in complex cavities. Do not attempt to carry out the bucco- and linguogingival line angles to a sharp, flat line, for danger is in that very vicinity in deciduous molars. The dovetail step must be made on all incisors and canines if actual retention of the filling material is to be expected. This dovetail step on the lingual surface affords a larger area for the filling material and protection against rocking the filling.

I wish it were possible here to consider sterilization of the deciduous cavities, the insertion and employment of a foolproof anodyne, nonconductor medicament as a base or pulpal protection, and the use of matrices. I have tried to point out some of the differences between deciduous and permanent teeth which must be considered in cavity preparation of deciduous teeth. These principles are not original, but are followed by those who are best succeeding in their work with children. "If the atomic theory proves sound, we have unearthed a vast reservoir of power, but it is physical power. All the world does not equal in power the quiet strength of one unselfish love. We speak not now of the love of man for woman; nor of the love of parent for child. The greatest motive power in all the world is the love of a real man for his brothers—that tender, unselfish regard through which his soul is connected to humanity. Such a love is reciprocal—it cannot, by reason of its generation, be aught but an alternating current of good feeling."

THE "PROTECT YOUR SMILE" PROGRAM IN MASSACHUSETTS

A RECENT release from the American Dental Association contains some interesting information from a report of Dr. Maurice Peters of Boston, which was made at the meeting of the New England State Societies in 1935. Every one knows about the 4-H Clubs, made up of about a million boys and girls of America between the ages of ten and twenty years, mostly from rural districts. This is a national organization, with a program of self-improvement (Head, Hand, Heart, and Health). The organization conducts a very thorough educational program.

From the Massachusetts Dental Society, the Department of Public Health, and the Massachusetts State College, all of the twenty thousand boys and girls in Massachusetts participating in a "Protect Your Smile" slogan as part of their general health program, are receiving instructions in diet and home care for mouth hygiene.

"All Massachusetts dentists, practicing in districts adjacent to 4-H Clubs, have been given an opportunity to participate in the program, by examining the mouths of all 4-H members and offering suggestions for their personal care, and improvement in their mouth conditions. Some 600 dentists are cooperating and are now in the process of consulting with the members as they are brought to the dental offices.

"The purpose of the Massachusetts Dental Society was twofold: First, a desire to have dentistry do its part in a health program for young people of the state, and second, for our own benefit in having 20,000 new potential patients, brought to the offices of dentists to receive dentistry's cooperation and advice, and its message of health and helpfulness to take home to at least four times 20,000 people needing dentistry's aid, and able to pay something for it.

"The idea apparently was originated by Mrs. McCarthy, Consultant in Dental Hygiene of the Massachusetts Department of Public Health; and while Massachusetts is the first state to carry out such a program, I feel it has wonderful opportunities for dentists of other states and should be promoted by them. I commend it to the officers of your society."

CHOICE OF FILLING MATERIALS FOR DECIDUOUS TEETH

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THE problem of whether or not to place amalgam or inlay fillings in deciduous teeth has been debated pro and con by some of the most eminent pedodontists in the country. During the course of listening to various discussions of this nature I cannot help but be reminded of a lecture given by the secretary of a taxpayers' alliance. He stated that there are two sides to every question, and there is also the truth. Could we not apply a statement of the same nature to our discussion? In debating a problem of this kind it is almost impossible to omit the personal equation. One man's personal dislike of some type of filling combined with his opponent's personal like of the same type of filling will always tend to deviate from the practical.

In divorcing the question from the personal aspect, there are many angles to be considered in the choice of the type of filling to be placed in a deciduous tooth. In submitting this paper, I have endeavored to correlate and discuss the material in an impersonal manner so that the reader can absorb and accept, criticize, or reject as the case may be.

The dentist, in the course of preserving the deciduous teeth, and best serving the children with health dentistry, must consider the three following points.

1. Anatomy of the deciduous teeth.
2. Preserving qualities of the filling materials.
3. Patient's ability to pay.

1. The pronounced difference in anatomy of the deciduous and permanent teeth is a factor to be considered when filling deciduous teeth. It is necessary for every operator in the field of pedodontia to have a thorough knowledge of the anatomy of the deciduous teeth. With this knowledge it is comparatively simple to prepare a slice or modified slice preparation cavity or a Black's class three cavity without exposing the pulp. The thin enamel layer covering the deciduous teeth is penetrated by dental caries very readily, and in 90 per cent of the cases of proximal decay, discernible only with the roentgen ray examination, there is considerable decay in the dentin. This condition requires an intermediate cement or sedative filling before the metal filling is placed. In the larger cavities in the deciduous teeth, this intermediate filling is always necessary. This makes the choice of metal filling optional, as either filling will affect the pulp equally under these conditions. Any type of cavity preparation applied to the deciduous teeth must be modified. The thinness of the enamel layer combined with the largeness of the pulp, bringing the pulp horns in close proximity to the external surfaces of the tooth, makes modifications mandatory to proper preservation of the health of the pulp where no intermediate fillings are necessary. This can be controlled in a simple manner by carefully preparing the cavity and decreasing the depth in the dangerous

areas, thus keeping the irritating metal as far away from the pulp as possible and reducing the irritation to a minimum.

2. The preserving qualities of the material chosen in the course of procedure when filling deciduous teeth is one of the paramount factors. The material of choice must maintain the tooth in a healthy condition and must stand the stress of mastication as its functional quality.

There is no doubt that every dentist in active practice for five years has seen both amalgam and inlay fillings that have been in service for ten years and have the appearance of being able to serve for a good many years longer. Radiographic examination substantiates this. Amalgam fillings which have restored cusps and lingual walls are perhaps a bit dark in color, but sound and serviceable. Inlay fillings which have become tarnished at the proximal surfaces, but which have good margins and are firmly in place in the teeth, are also sound and serviceable. It is the duty of the dentist serving children to place fillings in the deciduous teeth which will preserve them in a sound healthy condition to function properly until normal exfoliation. If both amalgam and inlay fillings have been performing this function satisfactorily in the permanent teeth for years, is it not safe to assume that they will do this in the deciduous teeth as well? If a *good amalgam* or *good inlay* filling is placed in a deciduous tooth, be it a simple, compound, or complex filling, there is no doubt it will preserve that deciduous tooth in a healthy normal functioning condition until exfoliation takes place.

3. It would seem, especially at this time, that the ability of the patient to pay for the service would govern the type of filling to be placed. This important factor will manifest itself in every practice. As a health servant of the public, the general practitioner of dentistry, in order to best serve his community, build a practice, and make a good living, must consider the economic status of each family and individual in his practice. In classifying practices it is safe to assume that there are three distinct classes.

Class I. This type of practice is carried on by the largest percentage of dentists. The clientele served by this group is composed of the lower income group of people, such as laborers, office workers, and small merchants. It usually is confined to a strictly neighborhood practice, and the offices are located in the residential districts in close proximity to the industrial areas. The greater number of small town practitioners belong to this group, serving the local community and the farmers.

Class II. The dentists practicing in this group include approximately a quarter of the practitioners of dentistry. They serve a mixed clientele composed of approximately half the patients in the lower income bracket and the other half in a higher income bracket. These offices in the city are found in the better residential districts and downtown. Each small community has at least one Class II office, the number depending on the size and character of the community.

Class III. This group, smaller in size than Class I and Class II serves those people in communities who belong to the large income group. The clientele in this type of practice are in a position to pay a reasonable fee for any type of dentistry.

With the practices segregated into their proper categories, the dentistry furnished each group must be considered.

Class I. In serving the people in the lower income bracket the income of the patient is the paramount factor. These people are forced to obtain the best possible dentistry for themselves and their families at a fee commensurate with their income. A dentist engaging in a Class I practice must, in order to serve his patients well, build and maintain his practice, and keep the fee within their scope of payment, place amalgam fillings in the deciduous teeth. In placing an inlay filling, whether gold or a substitute metal is used, the time involved necessitates a higher fee than for an amalgam filling. Experience will teach a dentist conducting this type of practice that should he place inlay fillings in deciduous teeth his patients will object because of the cost. This condition will force the practitioner to place amalgam fillings in the deciduous teeth. He will place inlay fillings only when the parents have a dislike for amalgam or where proper space retention may require inlay abutments.

Class II. This type of practice is no doubt the most versatile of the three classes. The income of the patient must always be considered in conducting the practice. Those patients in the lower income bracket must be served with amalgam fillings in the deciduous teeth in the same manner as outlined in a Class I practice. The clientele in the higher income bracket comprising approximately half of this class of practice can very easily afford to pay for inlay restorations in the deciduous teeth. It rests with the operator after consulting the parents what type of fillings will be placed in the deciduous teeth of the patients in this higher income bracket.

Class III. In a practice of this kind the predominating filling for deciduous teeth is the inlay. The patient's preference must be considered, and in most cases it will be gold inlay fillings. The practitioners in this type of practice confine themselves almost exclusively to gold work and have developed a preference for the inlay filling. With such economic conditions as are prevalent during the past few years, dental practice has suffered as well as industry. The number of Class III practitioners has been reduced because of lack of sufficient clientele. The remaining number have in certain instances been forced to readjust themselves, and today we find them placing amalgam fillings in deciduous teeth. This procedure or interchange was necessary in order to maintain practices by remaining within the scope of payment of certain less fortunate patients.

CONCLUSIONS

1. Any fair minded practitioner, when reviewing the history of both amalgam and inlay fillings regardless of the personal element, must agree that each filling material if manipulated properly will preserve the deciduous teeth in a healthy serviceable state until normal exfoliation takes place. It is true that in isolated cases the inlay filling may have a few advantages over the amalgam filling, but this would not comprise more than 10 per cent of the total number of fillings indicated.

2. In reviewing the types of practices it seems logical to assume that both amalgam and inlay fillings are placed in the deciduous teeth by dentists having any one of the three classes of practice. With this point firmly established, would it not definitely determine the fact that every practitioner serving children be obligated to equip himself to place either filling, correctly and efficiently?

3. The dental profession must serve people in all walks of life with health dentistry. This can be done for children with either type of filling. Any dentist's personal like or dislike for either kind of filling will no doubt govern somewhat the kind of practice he will conduct. He is forced to work out his own salvation and adjust himself to his clientele, as in many instances the personal equation should not be injected too far into his practice.

After all, the most important problem is to preserve the deciduous teeth in a healthy condition, and this factor should remain uppermost in the minds of the practicing dentists.

DOES DENTISTRY DO ITS DUTY?

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TO ALL of us the importance of this question is evident, but to the general public and the educated, even to many physicians, it seems to be exaggerated and of minor importance, often almost a *terra incognita*. This is regrettable, and every effort should be made to improve this state of affairs.

Does dentistry do its duty? I wish to make a general survey to answer this question. Our work is to keep dentures sound in those people who are entrusted to our care. We must make every possible effort to see that dentures develop normally, that they are strong, are well shaped and solidly founded, are equal to their whole task, first as deciduous and then as permanent dentures, in order that illness be prevented, and that eventual illnesses may be cured with little trouble and cost.

What is the real condition in most of the civilized nations? Let us honestly face the facts. Of course there are great differences among the different peoples, but I trust I have your assent when I describe the average condition of the civilized nations in this way:

In the deciduous denture jaw deformities, such as lateral compressions and open-bites, develop early; since in the third year of life caries with its harmful consequences occurs especially in the deciduous molars of many children. Insufficient cleansing, imperfect mastication because of soft food and the soreness of carious teeth, early destruction of many deciduous molars, followed by mesial displacement of the first permanent molars.

When entering school the majority of children show many carious deciduous molars, for the most part beyond the possibility of repair; a denture, well cared for by the dentist, is an exception.

When the deciduous denture has to change to the permanent one and later, many faulty occlusions, many anomalies of the jaws, abnormal appearance or retention of some teeth, crowded position of the front teeth, early loss of the first permanent molars (unless they have been saved by the school dentist), tilting of the premolars and the second molars usually occur.

After leaving school the dentures cared for by the school dentist will after some years undergo new decay, especially between the premolars and the molars and crooked front teeth. Dentures hitherto neglected show many carious teeth, jaw infections, loss of teeth, loosening, etc. Some possess artificial teeth with progressive loss of the adjoining teeth. Only a minority of the people have sound dentures, thanks to periodic investigation and treatment by the dentist; but here, too, focal infection is not always absent.

In old age, indeed as early as the fiftieth year, in a large percentage of people the denture is ruined; there are deep folds around the mouth, the nose, and the chin after extraction of the teeth.

Throughout life most people, from time to time, suffer toothache, jaw infections, focal infections, and premature loss of their teeth.

This description of the present state of dental health is utterly tragic. It is disheartening when we consider how much our profession is responsible for it.

Did we, in due time, warn successfully against the increasing degeneration of the masticatory organs? What about the continued reproduction of inferior offsprings saved from extinction by the devotion of the medical art? Did we point out the danger of facial and jaw disharmonies from the intermixture of races? Have we succeeded in urging mothers to feed themselves and their babies rationally, to check thumb-sucking and other hurtful habits, and have we imparted to parents the importance of powerful mastication and careful cleansing? Could we prevent in the school years the premature loss of the deciduous molars, the displacement of the first permanent molars, and their frequent loss? Did we preclude the anomalies of position and occlusion and the crowded position of the teeth? Have, by our efforts, the majority of the people grown up to possess a sound, strong denture, without displacement and tilting of teeth, resistant against decay and gum disturbances?

The answer is no; our success was a very limited one. The majority of the people, the peasants and the workmen and servants, leave their teeth to their fate. When a toothache teases them and does not pass away from a home remedy, the guilty tooth is sacrificed. In some cases the lost teeth are replaced by artificial ones for appearance's sake. The sick funds generally refuse to pay for periodical inspection and preventive filling, for the deciduous denture, although it is most important. A minority of well-to-do people trust the care of their mouths to a private dentist.

To this minority, and its health, we devote nine-tenths of our healing art. Even with them, our task is difficult and but little satisfying. We find caries and inflamed gums frequently resulting from neglect of the deciduous denture, with faulty occlusion, crooked position, tilting and elongation of the teeth, and sluggish mastication. This obliges us to a constant supervision, indefinite reparative work that exhausts to the utmost the sensibility and the patience of our clients, and our own nerves, and makes us dreaded more than we deserve to be. Our fillings and crowns and bridges possess a therapeutic value not inferior to the achievements of the medical and healing arts, yet constantly new decay and disease are to be apprehended after our best treatment. Moreover, the results of orthodontic treatment of inflamed gums, of pulp and root canal treatment frequently leave much to be desired; whereas the functional achievements of plate dentures remain far behind those of the natural organs.

The conclusion of this survey is utterly discouraging. While duly acknowledging the rapid development of therapeutics and technics of our specialty, we must acknowledge that we utterly fail to keep the dentures of the people, as a whole, in a sound condition. Jaw deformities, caries, and inflamed gums are neither prevented nor treated in due time and have not diminished generally. Our care reaches only a small minority; that is, from the third year of age (our conservative activities partly the result of procrastination). Viewed from the standpoint of public health, we can at present almost speak of a *failure of dentistry*.

Must we resign? May we let things take their course? Can the profession rise to its task in the future? Surely the F.D.I. cannot withdraw from answering these questions!

You are well aware that neither the present repair of teeth prone to decay and with inflamed gums—frequently only sought by the stimulus of pain—nor the school dental care without caring for the carious deciduous molars, can lead us to general good dental health. The growth and the preservation of a sound and strong denture can be attained only with good heredity, a healthy development before birth, and suitable nutrition afterward, and if bad habits of the baby are prevented, and if thorough cleansing and efficient mastication are successfully impressed upon the child. Only periodic inspection by the dentist and prompt repair of carious decay can assure normal development in the early years. This dental care must be continued in the school years and must remain a practice for life.

You know it, my colleagues! But the majority of mankind and the millions of sufferers ignore the causal connection, and for that reason we are obliged to warn them and to deliver our message until it rebounds from everywhere!

Systematic dental care of the teeth of little children is the foundation and the only basis for universal dental health. If successfully organized and executed, this prophylactic care will reduce the work of the school dentist to a fraction of the present work; it will help the coming generation, for whose health the adults are responsible, begin the struggle for life supplied with strong sound dentures. When this aim is reached, our profession will have fulfilled its duty, and in consequence the therapeutic measures to provide for the dental health of the adult population will be slight compared with the present.

The organization and maintenance of the preschool dental service will entail labor and expense. To urge the people and the authorities to offer this service, we must convince them of its need and explain the many advantages in health and in economics to be gained by a rational preschool service. The school dental service, notwithstanding the difficult times, has been extended and secured and does splendid work; but we can prove that it comes too late to furnish a real health condition for life.

I repeat it. We know it. Our long clinical experience leaves us in no doubt. The laymen, however, demand evidence, and in order to impress them we have tried to solicit the cooperation of our colleagues for a record of the condition of dentures when children enter school. One cannot describe all the diseases and all the details; to save time one must restrict oneself to the main points.

The plan, added to the appeal, shows the facts we want to have stated at the child's age of six years.

1. The early occurrence of caries in deciduous molars.
2. The great number of carious deciduous molars with pulp disease (aching and unfit for mastication).
3. The great number of deciduous molars with root disease (manifestation of infections).
4. The number of carious deciduous molars already broken down (the room for the successors is not preserved).

5. The number of carious deciduous molars already extracted (no space remains for the premolars).
6. Thumb-sucking (jaw deformities).
7. Mouth-breathing (jaw deformities).
8. Mesial displacement of the first permanent molars (faulty occlusion, crowded position of the front teeth).

No record is to be made of the caries of the front teeth of the deciduous denture, since they have little influence upon the permanent denture.

These statistics are likely to demonstrate the sufferings of children and the damage done to the permanent denture, for a great part past remedy, and to explain the possible enormous economy in dental work by early intervention. Obviously the record and the publication could have been done independently in every country as soon as our colleagues should have judged it suitable, as the organization required would have to adapt itself to the institutions of each country anyway. But an appeal to the conscience may act in a suggestive and stimulating way. It is certainly much more impressive when it is proved to the public that this state of affairs is by no means local, but that similar conditions have been found in all civilized nations. The evidence and the importance of our plans can then only become stronger. I am sure that I need not argue this before this international court.

The resolutions to be submitted to the next International Congress for approval are the logical results of our clinical experience, and undoubtedly they will be supported by the outcome of the projected record. They will have to be supported by explicit facts.

There is one problem that certainly will have to be considered. *Is our profession ready and is it capable to provide the preschool dental care?* We know the personal and local difficulties connected with the treatment of the small patients, the loss of time because of the cautious way of approaching the young ones, because of the child's restlessness, and the frequent interruption by psychological overstrain. Only with the cooperation of the children can treatment be brought to a good result, and how disappointing is the lack of readiness of the parents to compensate our efforts. Indeed it is a well-known experience of the family doctor or the pediatricist that the treatment of the deciduous denture, requested by them from the dentist—mostly, it is true, for relief of pain—is refused, the dentist restricting himself to extraction since the teeth are to be replaced anyway. This conduct of the dentist is indeed objectionable, but it can be understood on account of the difficulties mentioned. For this reason I have proposed to entrust this care to the young dentists, directly after examination, admitting them to private practice only after they devote a year exclusively to preschool dental care, with a modest recompense in money. I wish only to mention my proposition without discussing it here today.

At any rate, the question of the readiness of our profession must be solved unless the unsatisfactory state of matters is to remain. The enormous wasting of conservative exertion with only a part of the grown-up population and increasing general deterioration of the dentures of civilized nations with all its consequences are a shame to the dental profession.

Will it really be possible to conquer the ignorance and the inertia and the misplaced economy of the instances responsible for public health? Will it be possible to overcome the aversion to preschool dental care in our profession? I hesitate to answer these questions, but I must earnestly view the alternative, the negative issue.

Suppose it proves to be impossible to realize this preventive care. Then we shall have to ask ourselves whether it is not wise to abandon the school dental care and the conservative treatment of the small well-to-do part of the people, too, to save the pains, the exertion and the costs of this work and then after this placid neglect, about the thirtieth to the fortieth year resort to general extraction and replacing with an artificial set of teeth. We need not cherish any illusions. This method of procedure is already existing to a great extent, not only with the poor people but also with the middle class, especially in regions where conservative treatment is too bad or too expensive on account of the inability or the indolence of professional men.

Diseases and degeneration of the denture are chiefly phenomena of civilization and consequences of domestication with nutrition prone to fermentation. Virchow attributes to an Irish doctor the statement, "Man is the only cooking animal," hereby strikingly pointing out our way of feeding. In the same degree, as our food is becoming more liable to fermentation and more thoroughly crushed and stickier and softer, by preparation in the kitchen and by fork and knife, the denture is relieved of its function of biting and grinding. The food needs scarcely any crushing in the mouth to become satisfactory for swallowing and assimilation. Meanwhile our prosthetic restorations have become more useful and cheaper, being nearly bazar good, and they can satisfy fairly well most of their possessors, provided the wearers are not too old or too shiftless to learn the art of managing the plates.

Already civilization is substituting and improving on nature to facilitate our functions. The legs of our fastest runners cannot compete with the motor car or the steam engine. In the place of our skin and our hair, clothing now protects us from the weather; in the place of foliage of trees and caves, our houses. In the place of our hands, mechanical weapons protect us, and our eyes are fortified by spectacles, microscopes, and telescopes. Even the charming stimulants of sexual attraction, serving the maintenance of the species, when their charms are insufficient, are supplied by appealing clothes, lipstick and rouge, artificial hair, gloves, and eyebrows.

What an immense saving in suffering and money, what a profit for the dentist would result by replacing the exhausting conservative treatment by general extraction under anesthesia, and restorations of beautiful white porcelain teeth!

But what an awful *testimonium paupertatis* for our profession, for the devotion of its attendants! Before conservative dentistry capitulates, it should try to conquer. Our appeal and the proposed resolution may be a weapon in this combat.

MOUTH HYGIENE FOR CLEVELAND SCHOOL CHILDREN*

HARRIS R. C. WILSON, D.D.S., F.A.P.H.A., CLEVELAND, OHIO

THE mouth hygiene program for school age children in Cleveland in 1934 exhibited no material change. In the early part of the year a limited amount of additional service was available through the Civil Works Administration. The staff with the above exception remained the same in number as in the previous year. The accomplishments of the staff were above those of 1933.

This report is prepared in a more condensed form than previously, but the figures are directly comparable with those of 1933. A detailed report of the service in nearly all the public and parish schools of Cleveland is on file in my office at the Board of Education.

When one looks objectively at the mouth hygiene problem, it appears that little real advance has been made in the past twenty-five years. As we observe the entrant children from year to year, they present essentially the same dental conditions. There is a slight but encouraging improvement in tooth quality among a very limited well-to-do group. The change seen in the mouths of school children is largely due to dental service rendered. The mouths do not exhibit a real improvement in the growth of sound teeth. The growth of sound teeth, i.e., teeth without developmental faults in the pits and fissures of the enamel, is our goal. We have believed for two decades that this could be accomplished by means of an optimal diet from before birth through the period of infancy. We are slowly realizing that we have not yet all the knowledge necessary to produce the desired results en masse. Laboratory experiments that produce a 50 per cent improvement in tooth quality are not satisfactory when applied to the population of a large city. There is no doubt that a diet of man-treated foods is far less satisfactory than a native diet as used by primitive peoples.

There is ample evidence that during the past century, transportation, the improvements of this machine age, and the greed for gold, together with false or at least extravagant advertising, have developed the use of foods that fail signally to promote growth and health. The past two decades have taught us much toward a return to a diet that will, we believe, eventually lead to the development of normal teeth. There are apparently some undiscovered factors which are essential for the accomplishment of our goal. When this knowledge is acquired, we then shall have the long process of making the application of that knowledge socially popular. This will take decades. In the meantime, semi-preventive measures must be taught and repair must be the practice. Early tooth repair of good quality is quite satisfactory. The problem is to see that the early care is provided for all children at a price within the ability of society to pay.

*Annual report of the Cleveland Board of Education and joint groups.

Our policy is to examine all elementary pupils once a year; we then bring to the attention of parents (parent consultations) the need for such remediable dental service as we feel will contribute to the health of the child and thereby facilitate educational processes. While orthodontic service would be of value to perhaps 20 per cent of the pupils, the expense would be so great that we deem such conditions not remediable from our viewpoint.

Our policy is to examine junior high school pupils when the principal of the junior high school requests the service. If we examine junior high pupils, we undertake to secure the correction of remediable dental defects through direct appeal to the pupil by our staff member or by the hygiene teacher.

Our policy is *not* to examine in the senior high schools unless urgently requested by the principal; we believe that if our work has been well done in elementary and junior high schools there will be insufficient need for our service to compensate for the time spent.

In all parent and pupil consultations we seek to have the parent provide adequate health dental service, and we teach the simple rules of diet and good hygiene as much as time permits.

THE PROGRAM

The school enrollment of kindergarten, elementary, junior high, and special schools (118,200) is divided about equally among the five staff dentists in the public schools. Each is responsible for an annual examination and a recorded diagnosis for each pupil attending his group of schools. The dentist visits each of his schools at least once a week. Each dentist has four hygienists or assistants. Each of them has about 6,000 enrollment. She is always present at the examination and records the findings. Later she sends for and interviews the parents or pupils or both in an effort to secure the correction of remediable dental defects. She makes very few home visits. It is more economical of her time to have the parents come to the school. The hygienist accompanies groups of pupils to the hospitals for emergency or extraction service.

Hospital fees and transportation are always paid by the parent in advance. We have no credit system. The same program is carried on in the parish schools (39,000 enrollment) by the Division of Health. The dentists (four) are each on half time, mornings; while in the public schools the entire staff is on full time for thirty-eight school weeks. In the parish schools each of the four full-time assistants has about 10,000 pupil enrollment which is more than is possible for follow-up by one person in thirty-eight school weeks.

One parish school has filling service provided by the Division of Health, on five half-days per week for thirty-eight weeks.

In 1934 the schools assigned to each staff member were essentially the same as in 1933; therefore we are not printing the assignments in this year's report, but refer any one interested to the report for 1933 or to the complete detailed report which is on file at Public School Headquarters.

Experience has taught that parent consultations are the best means of securing results in the case of elementary pupils. In junior high schools we deal with the pupils directly and with the parent only upon request of the pupil.

In our consultations with parents we attempt to refer all parents to the private practitioner of dentistry. A high percentage agree to go. We accept their expressed good intent, although we know that many will have to be called to school later and referred as pay clinic or free cases. It is difficult to determine who can pay and who can but will not. If a parent proclaims financial inability to pay dental fees, the mouth hygienist undertakes to make an economic rating. If the hygienist determines that the parent is able to pay \$1.00 a tooth for filling service but is not able to pay private fees, the parent is then directed to seek reduced fees from the private dentist or to choose a dentist from the list furnished by the Cleveland Dental Society, of members of that organization who have volunteered to care for pupils referred and rated by our staff as worthy of care at \$1.00 per tooth.

The original lists contained names of one hundred seventy-five dentists who would care for children at full fees, pay clinic fees, or free. Shortly after we began referring cases to the men on these lists, it became evident that the full pay case usually went to the former family dentist, which did not impress the dentist as the case was a former patient. The pay clinic cases (\$1.00 a tooth) usually did not immediately seek service because of the need for time until money was available.

The free case was always one in which the parents were out of work, so they had time to take the child at once. The result was that the free cases flooded the private offices with the least desirable class of patients from the viewpoint of the dentist having an elaborately appointed office designed for a refined clientele of patients. Protests came promptly with request to remove the dentist's name from the free list. This left fewer and fewer names on the free lists, so that the burden of free cases was ever increasing for those remaining on the lists. It soon became necessary to cancel the free lists entirely.

There is no reason to expect the dental profession to provide free dental service any more than to expect the plumber or carpenter to give his services free.

The dental profession should be the best qualified group to develop a plan whereby all, in this case all school age children, may enjoy the benefits of the knowledge and skills known to modern dentistry. Every service costs something; therefore when service is rendered some one must pay.

I have repeatedly expressed the idea that the dental profession owes society a plan whereby all children may have the necessary health dental service. We have always tried to make clear the distinction between a plan for service for all and the actual service. There is no implication that the service should be rendered without adequate compensation. Compensation should cover all the costs involved in rendering the service and include

reasonable compensation for the dentists. I believe that health dental service for children should be paid for by the parents when possible.

I am not unmindful of the changing public viewpoint. In the near future it is probable that all children will receive adequate health dental service during the time they attend public schools on a financial basis that will be designated "free" just the same as public school education is called "free." When the public demands such service, we shall be entering an era of improved health for the community.

OBJECTIVES

The objectives of the mouth hygiene program in the public and parish schools of Cleveland are:

1. To discover the remediable dental defects of the pupils.
2. To secure the correction of such defects through parent and pupil consultation.
3. To teach the pupils the methods and the value of early correction of dental defects.
4. To teach such preventive measures as seem justifiable in the light of present-day knowledge, such as the increased use of milk and all dairy products, fresh fruits and vegetables, with a decrease in the use of refined cereals and sugars even to the abolition of the use of cereals for young children.

THE PROBLEM

The examinations in 1934 revealed that 111,805 pupils had carious teeth, or 80 per cent of the total group examined. The incidence of carious deciduous molars (46 per cent) is not significant for the reason that the group examined reaches into grades where the deciduous molars are normally shed. The real fact is that nearly all the pupils suffer from carious deciduous molars between the age of five and ten years. The fact that 50 per cent of the pupils have an average of 2.2 carious first permanent molars is a sad commentary on our success in growing sound teeth through the agencies of cleanliness and diet.

The fact that 28 per cent of the pupils have dental service is evidence that the mouth hygiene activity has accomplished much in the past twenty-five years. Twenty-five years ago 3 per cent exhibited dental service. We interpret the fact that only one-third of those who receive dental service have had complete care (9.8 per cent) to mean that either the parent feels he cannot afford to complete the service or that the service was not satisfactory or that insufficient effort has been made to reexamine for additional initial dental caries.

It is of interest to note that 73 per cent of the pupils need fillings and that 37 per cent need extractions. It has long been appreciated that a small percentage of the pupils can have completely corrected mouths by the extraction of a few teeth. It is apparent that about 7 per cent are in this class.

The problem as revealed by the examination for 1934 was to secure the extraction of one hundred forty-one thousand teeth and to secure the filling of three hundred thirty thousand teeth.

The mouth hygiene staff held 139,416 pupil consultations and 24,845 parent consultations. A total of 14,789 pupils were referred to private dentists for fillings; and 25,238 pupils were referred for extractions to private dentists, pay clinics, and for free service.

The results were 25,635 teeth filled, or 7.6 per cent accomplishment; also 68,076 teeth extracted, or a 48 per cent accomplishment. While this is the best accomplishment made by the staff, we could and would improve it if more extraction service were available for the very poor preschool and school age children. The cost of such service at City Hospital is about forty cents per case, to which there should be added a modest compensation for the visiting dentists rendering the service, as a part of the true cost.

Why do we secure the correction of only 7.6 per cent of the carious teeth needing fillings and only 48 per cent of those so seriously diseased as to require extraction? There are four fundamental reasons, arranged in the order of their importance:

1. The present economic conditions.
2. The unsettled and divergent social viewpoints of the dental profession.
3. The lack of personnel.
4. The indifference and lack of knowledge of the people regarding the relation of teeth to health.

Some twenty minor direct reasons could be enumerated, but they are largely included in the four basic reasons above.

It may be of interest to compare the number of fillings made for school children during the past several years. In 1921 to 1928 our efforts were spent largely in placing fillings and in cleaning teeth in the public schools. In 1929 the mouth hygiene staff spent much time in securing extractions. 1929-1930 was the most active period at the Lodge Extracting Clinic, which explains the decreasing number of fillings placed in these years. The change in our program, giving more time to the extraction cases and less to fillings, was followed in 1931 by a drastic reduction in staff so that the whole program was changed.

In 1931 and 1932 the filling service, rendered entirely in the private dental offices, was recorded as completed cases. It is probable that the ten thousand completed cases in 1932 involved about twenty thousand fillings. In 1933 and 1934 the filling service was recorded as teeth filled.

1921-22	11,307	in public schools
1922-23	9,730	in public schools
1923-24	9,080	in public schools
1924-25	10,260	in public schools
1925-26	16,593	in public schools
1926-27	20,587	in public schools
1927-28	23,032	in public schools
1928-29	19,552	in public schools

Sept.-Dec., 1929	6,028	in public schools
1930	7,425	in public schools
1931	3,570	in private offices
1932	10,483	in private offices
1933	20,616	in private offices
1934	25,635	in private offices

AID THROUGH CIVIL WORKS ADMINISTRATION

From January 3, 1934, to the end of March, 1934, the Civil Works Administration made it possible for eight women assistants to work in the parish schools with our dentists in the examination of pupils and in parent consultations.

It was not possible in the brief span of three months to train these recruits to do more than the clerical work. Their service, however, was a help in the routine clerical part of our program. It released our own staff so that more time was available for parent consultations which meant more accomplishments, that is, more pupils were relieved of their remediable dental defects. This means better health for the pupils, and this health promotes the educational process which in turn is our ultimate objective as a school system.

Early in 1934 the Division of Health appointed an additional dentist to our staff for five mornings per week for the school year. He was assigned to Nativity School for clinical service for the pupils of that school.

SUMMARY OF SCHOOL CASES CARED FOR IN THE DENTAL SURGERIES OF THE COOPERATING HOSPITALS

Mt. Sinai Hospital	1,925
St. John's Hospital	2,419
St. Luke's Hospital	5,219
City Hospital	2,873
Charity Hospital*	64
Total	12,500

*Charity Hospital serves a small group of schools within walking distance for a fee of \$1.00 for each case.

Twelve and a half thousand pupils received complete extraction service (about four teeth each) in the cooperating hospitals. All of the hospitals provide their service on both a pay clinic and free basis except City Hospital which is all free. The details of the service in each hospital are presented in the following tables:

Rating symbols and their significance as used by the schools when referring extraction cases to the hospitals:

	THE PATIENT PAYS
Rate 0	\$1.75
Rate I	1.00
Rate II	.50
Rate III	.25
Rate IV	Free

Ratings II and III are discouraged. For filling service Rate 0 pays full professional fees; Rate I pays \$1.00; and Rate IV is free.

MT. SINAI HOSPITAL

	RATE 0	RATE I	RATE II	RATE III	RATE IV	TOTAL SCHOOL CASES
January	5	3	18	65	111	202
February	15	24	17	50	98	204
March	9	13	9	43	123	197
April	22	22	12	51	135	242
May	19	24	14	51	138	246
June	9	22	8	25	110	174
July	1	3	4	7	36	51
August	0	0	2	3	13	18
September	0	0	0	7	10	17
October	18	30	5	25	121	199
November	25	30	4	11	118	188
December	9	18	2	12	146	187
Totals	132	189	95	350	1,159	1,925

Average fee to the hospital per case was \$0.28.

ST. JOHN'S HOSPITAL

	RATE 0	RATE I	RATE IV	TOTAL SCHOOL CASES
January	5	134	8	147
February	81	238	43	362
March	166	309	121	596
April	37	224	22	283
May	114	627	78	819
June	13	194	5	212
Totals	416	1,726	277	2,419

Average amount paid to clinic was \$1.01 per case.

ST. LUKE'S HOSPITAL

	RATE 0	RATE I	RATE IV	TOTAL SCHOOL CASES
January	51	117	43	211
February	108	290	62	460
March	113	388	85	586
April	116	271	60	447
May	200	460	141	801
June	132	302	145	579
September	1	3	3	7
October	126	289	87	502
November	262	762	206	1,230
December	71	272	53	396
Totals	1,180	3,154	885	5,219

The average amount paid the hospital for the care of these cases was \$1.00 per case.

CITY HOSPITAL

	SCHOOL PUPILS	TOTAL CASES
January	297	898
February	257	736
March	322	930
April	340	841
May	347	833
June	252	792
July	54	807
August	37	905
September	66	727
October	304	964
November	320	820
December	277	670
Totals	2,873	9,923

Twenty-eight per cent of the service at City Hospital was for school pupils. The pupils came from 96 public and 41 parish schools. All are treated free.

The service rendered by the staff of the Warrensville Tuberculosis Sanatorium included 8 crowns, 8 gold inlays, 7 bridges, 2 three-quarter crowns, 13 full upper plates, 12 full lower plates, 9 partial plates, and 3 plate repairs, as well as the service listed below by months.

WARRENSVILLE TUBERCULOSIS SANATORIUM

	PROPHYLAXIS	EXAMINATIONS	AMALGAM	PORCELAIN	CEMENT	EXTRACTIONS	POSTOPERATIVE	SILVER NITRATE	VINCENT	PLATE ADJUST- MENTS	IMPRESSIONS
January	140	193	13	2	12	182	13	3	9	6	5
February	102	18	36	2	14	120	10	3	12	12	2
March	137	36	48	10	22	121	8	1	2	18	5
April	130	174	28	20	21	130	4	3	3	14	8
May	124	36	27	12	17	154	1	5	3	27	8
June	95	124	40	12	18	62	1	1	10	12	4
July	79	52	16	5	26	23	8	5	13	9	0
August	138	28	21	2	18	33	1	6	8	4	0
September	17	34	22	2	13	21	1	2	5	6	7
October	65	32	37	4	35	64	6	3	4	5	2
November	168	36	34	5	12	60	13	6	8	3	3
December	123	16	27	5	19	30	48	5	2	5	2
Totals	1,318	779	349	81	227	1,000	114	43	79	121	46

The service for children is included with that for adults.

ALL PUBLIC SCHOOLS—KINDERGARTEN TO NINTH GRADE INCLUSIVE; STAFF—5 DENTISTS, 10 HYGIENISTS, AND 10 ASSISTANTS FULL TIME; DATE OF EXAMINATION—1934;
DATE OF REPORT—DECEMBER, 1934

Enrollment	118,211
Pupils examined	104,605 or 88.4%
Total pupils with carious teeth	84,014
Physiologically perfect	10,846 or 10.3%
With carious deciduous molars	51,430 or 49.1%
No. of carious deciduous molars	178,532 or 3.4 per child
With carious first permanent molars	51,087 or 48.8%
No. of carious first permanent molars	113,139 or 2.2 per child
Total carious teeth	368,750 or 3.9 per child
With evident dental service	29,624 or 28.3%
With complete dental service	9,745 or 9.3%
No. of filled teeth	97,603 or 3.2 per child
Pupils needing fillings	79,181 or 75.7%
No. of teeth needing filling	270,108 or 3.4 per child
Pupils needing extractions	36,387 or 34.7%
No. of teeth needing extraction	98,642 or 2.7 per child
Pupil consultations	124,909
Parent consultations	17,527
Filling cases referred to private dentists	6,699
Filling cases referred to pay clinic	1,186
Filling cases referred to free service	228 8,113
Extraction cases referred to private dentists	4,496
Extraction cases referred to pay clinic	5,897
Extraction cases referred to free service	8,796 19,189
Cases escorted for extraction	7,191
Cases escorted for filling	5

Emergency relief in school	1,912	
No. of teeth filled by private dentists	15,825	
No. of teeth filled by pay clinic	1,069	
No. of teeth filled by free clinic	793	17,687
No. of teeth extracted by private dentists	11,594	
No. of teeth extracted by pay clinic	19,453	
No. of teeth extracted by free clinic	21,569	52,616

ALL PARISH SCHOOLS—FIRST TO EIGHTH GRADE INCLUSIVE; STAFF—5 DENTISTS AT HALF TIME, 4 ASSISTANTS AT FULL TIME; DATE OF EXAMINATION—1934; DATE OF REPORT—DECEMBER, 1934

Enrollment	39,063	
Pupils examined	34,870	or 86.4%
Total pupils with carious teeth	27,791	
Physiologically perfect	3,179	or 9.1%
With carious deciduous molars	12,970	or 37.2%
No. of carious deciduous molars	38,163	or 3.0 per child
With carious first permanent molars	19,512	or 56.0%
No. of carious first permanent molars	42,656	or 2.2 per child
Total carious teeth	103,261	or 3.2 per child
With evident dental service	9,436	or 24.2%
With complete dental service	3,900	or 11.2%
No. of filled teeth	27,228	or 2.8 per child
Pupils needing fillings	22,809	or 65.4%
No. of teeth needing filling	60,335	or 2.5 per child
Pupils needing extractions	15,408	or 44.2%
No. of teeth needing extraction	42,926	or 2.8 per child
Pupil consultations	14,507	
Parent consultations	7,318	
Filling cases referred to private dentists	3,440	
Filling cases referred to pay clinic	3,203	
Filling cases referred to free clinic	33	6,676
Extraction cases referred to private dentists	1,867	
Extraction cases referred to pay clinic	2,944	
Extraction cases referred to free service	1,238	6,049
Cases escorted for extraction	2,546	
Cases escorted for filling	27	
Emergency relief in school	128	
No. of teeth filled by private dentists	4,221	
No. of teeth filled by pay clinic	2,784	
No. of teeth filled by free service	943	7,948
No. of teeth extracted by private dentists	3,541	
No. of teeth extracted by pay clinic	9,695	
No. of teeth extracted by free service	2,224	15,460

PUBLIC AND PARISH SCHOOLS—KINDERGARTEN TO NINTH GRADE INCLUSIVE; STAFF—5 FULL TIME AND 5 HALF TIME DENTISTS, 10 HYGIENISTS, AND 14 ASSISTANTS

Enrollment	157,214	
Pupils examined	139,475	or 88.7%
Total pupils with carious teeth	111,805	or 80.2%
Physiologically perfect	14,025	or 10.0%
With carious deciduous molars	64,400	or 46.1%
No. of carious deciduous molars	216,695	or 3.3 per child
With carious first permanent molars	70,599	or 50.6%
No. of carious first permanent molars	155,795	or 2.2 per child
Total carious teeth	472,011	or 4.2 per child

With evident dental service	39,060 or 28.0%	
With complete dental service	13,645 or 9.8%	
No. of filled teeth	124,831 or 3.2 per child	
Pupils needing fillings	101,990 or 73.1%	
No. of teeth needing filling	330,443 or 3.2 per child	
Pupils needing extractions	51,795 or 37.1%	
No. of teeth needing extraction	141,568 or 2.7 per child	
Pupil consultations	139,416	
Parent consultations	24,845	
Filling cases referred to private dentists	10,139	
Filling cases referred to pay clinic	4,389	
Filling cases referred to free service	261	14,789
Extraction cases referred to private dentists	6,363	
Extraction cases referred to pay clinic	8,841	
Extraction cases referred to free service	10,034	25,238
Cases escorted for extraction	9,737	
Cases escorted for filling	32	
Emergency relief in school	2,040	
No. of teeth filled by private dentists	20,046	
No. of teeth filled by pay clinic	3,853	
No. of teeth filled by free service	1,736	25,635
No. of teeth extracted by private dentists	15,135	
No. of teeth extracted by pay clinic	29,148	
No. of teeth filled by free service	23,793	68,076

FILLING SERVICE

There is no doubt that the ideal method of providing remedial dental filling service for school pupils up to sixteen years would be to make mandatory upon boards of education the provision of such service for all children on the same basis that education is provided for all.

While this is advocated by some dentists who have more than usual clinical experience and basis for good judgment, it seems to me that to undertake a service for those who can afford modest fees would be the more logical program in these financially distressing times. In theory it may be right for society to provide for all pupils, but in practice we would accomplish more by attempting the care of only those who can pay the cost of service under organization. Certain elements in society will be shocked by the proposal to neglect the very poor. This is not serious because when a clinic is once established to render service at cost those members of society who express sympathy for the poor will then have available a good service for the poor as soon as the money is provided to meet the cost. Such a service is not now available. Some one must pay the cost of service. The poor do not now have dental filling service; therefore they will be no worse off than at present.

The first step in such a program is for the dental profession to develop an efficient clinical filling service and offer it to that portion of the child population which does not now enjoy dental filling service.

About 10 per cent of the children in Cleveland now have adequate health dental filling service. These, of course, are from that portion of society which can afford private dental care.

Another 18 per cent of the children in Cleveland have had some dental service but are now in need of further service. This group of pupils and another large group of pupils, say 30 per cent, could afford service in an efficiently organized clinic. The remaining 40 per cent will continue to go without, as at present.

The objection offered by some dentists is that a part of the 10 per cent now enjoying private care will choose to go to the clinic because it will be cheaper. These cases should in the judgment of such dentists be kept in the private practice offices for the support of the present method of conducting dental practice.

There are two other reasons why some of the 10 per cent will seek the clinic:

1. The method of handling the children is more acceptable to child and parent in a well-conducted clinic because better psychology is practiced.
2. The quality of service in a clinic is intended to be acceptable to the very best of the private practitioners. The operators in such clinics become expert in doing one thing, i.e., health dental fillings for children under anesthesia.

There is no claim that the operators in the clinic are any better than those in private practice, but with instruction and group incentive they become very efficient in *one* type of service. The young dentist (graduate) may perfect his ability as an operator in a marked degree with one, two, or three years' internship with pay in such a clinic. He is then a more valuable man to serve the child public.

From a broad social viewpoint such a service is undoubtedly best for the public and for the future of the dental profession. It is probable that the present private practitioner would lose some of the 10 per cent now employing his service. An advantage to the profession of such a plan is that each year a group of some thousands of sixteen-year-old pupils will leave the school system "tooth conscious" and will demand from the private dental profession good dental repair service. This education of the people should have a marked tendency to eliminate the charlatans or advertisers who claim more than is possible.

The net result to the dentist of such a clinical program for school pupils would be the exchange of one pupil (three to sixteen years of age) in distress for several at sixteen years and older who would seek to *save* their teeth instead of neglecting them until extraction is the only remedy.

I recommend that a pay cost dental filling service be established of such size that about 10 per cent of the needed service could be provided within a school year. About 100,000 pupils need dental fillings; therefore a service to care for 10,000 should be undertaken.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. EGON NEUSTADT AND DR. JOSEPH D. EBY, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. Egon Neustadt, 133 East Fifty-Eighth Street, New York City.

Applied Orthodontics. By Dr. James David McCoy, Philadelphia, 1935, Lea & Febiger.

In the fourth edition of his well-known and fundamental textbook on orthodontia, the author stresses the differentiation of diagnosis, etiology, and treatment. "Each should be considered separately and in proper sequence. Diagnosis comprises all methods essential to determine the nature and extent of anomalies. . . . Etiology seeks to determine the various causes for such aberrations. . . . Treatment strives to apply methods which will restore to natural form." . . .

ORTHODONTIC DIAGNOSIS

The first of these three basic topics to be discussed is orthodontic diagnosis. An introductory chapter deals with the growth of the masticatory apparatus, the normal relations of the teeth and dental arches, and the anatomical factors governing occlusion.

Then the dental and oral anomalies are described. They are divided into five pathologic conditions: (1) malposition of individual teeth; (2) maldevelopments of arch form; (3) malrelation of the dental arches; (4) malrelation of the dental arches accompanied with maldevelopment of portions of the maxilla or mandible; (5) miscellaneous deformities.

For studying these deviations, two methods of approach are enumerated; one of them is the intraoral observation upon which Angle's classification is based. This method, however, should only be used to supplant the second and more comprehensive method, which was introduced by Simon. It employs cephalometric principles and allows us to study not only the relation of the teeth to themselves, but also the relationship which the dental arches bear to certain planes of face and skull. (For completeness sake, one of the graph surveying methods should find a place in this chapter, perhaps the one developed by Dr. F. L. Stanton, this being at the present time the most accepted representative.)

Accurate denture and facial reproductions are considered essential for diagnostic considerations, and they are, for this reason, presented in great detail. The use of modeling compound is preferred as impression material because of its greater ease and simplicity. Its disadvantages can be overcome

by the use of suitable trays, by the proper preparation of the impression material, and by the correct handling of it while taking the impression. After these factors are explained by means of suitable illustrations, the making of gnathostatic casts from the impressions is described, together with the finishing and trimming of them. Then follows the technic for plaster impressions.

In addition to accurate dental reproductions it is advisable also to obtain facial reproduction, "... a profile view showing the crucial relations of the jaws being most essential." Simon's photostatic method is followed, which provides a great degree of accuracy and allows subsequent photographs to be reproduced under identical conditions.

The roentgenogram is another important diagnostic aid. Its indications are manifold, and include: determining the presence or absence of unerupted teeth, guiding the extraction of deciduous teeth, observing teeth undergoing root movement, observing the development of third molars, etc.

Besides denture, facial, and roentgenographic records, it is—for the sake of a complete diagnosis—necessary to obtain a consultation record. This should contain all relevant facts in the clinical history of the patient, such as the incidence of caries, number of teeth, size of tongue, general health, nose, lips, and facial muscles, and, in addition to this, all possible etiologic factors.

THE ETIOLOGY OF DENTAL AND ORAL ANOMALIES

Etiologic factors are divided into predisposing and determining causes. To the predisposing causes belong endocrine unbalance, metabolic disturbances, acute or chronic infectious diseases, prenatal abnormalities, congenital defects, and hereditary conditions.

Among the determining causes are the following: missing teeth, supernumerary teeth, transposed teeth, malformed teeth, abnormal frenum labium, intrauterine pressure, sleeping and posture habits, abnormal muscular habits, malfunctioning muscles, premature shedding of deciduous teeth, tardy eruption of permanent teeth, prolonged retention of deciduous teeth, premature loss of deciduous teeth, loss of permanent teeth, and improper dental restorations.

The author devotes five chapters to a thorough discussion of each one of the factors mentioned. One of these chapters is entitled "Hereditary and congenital factors in dental and oral anomalies," and in it he relates the widely varying views on these subjects and suggests that one should be very cautious before definitely attributing an anomaly to hereditary causes.

TREATMENT

Among a series of chapters entitled "Pre-Treatment Requisites" is one which deals with the tissue changes incident to the movement of teeth. It contains a description of the older theories on tooth movement (bending of the alveolar process, etc.); an anatomic and histologic consideration of the compact bone, the cancellous bone, and the alveolar process (which is essen-

tial for the understanding of tissue changes); and the experimental evidence which Oppenheim has obtained in labial and lingual tooth movement, in tooth elongation, and in depression. In consequence, there is this warning: "In view of the fact that bone reacts so definitely to the stimuli of properly applied pressure, it is incumbent upon the orthodontist to consider carefully any contemplated movement, so that pressure, when applied, will bring about only those reactions which will be utilized for bone growth and development in the right direction."

The orthodontic appliance is defined as "a mechanism for the application of pressure stimuli to malposed teeth, to bring about the necessary reactive processes within the bone which allow tooth movement in the direction desired and the growth and development in the arches essential to support the teeth in normal function." Several matters should be considered carefully regardless of the type of appliance used: control of force, stability of attachment, strength and delivery, cleanliness, inconspicuousness, sources of anchorage, force and resistance, and the selection of the anchor teeth. The construction of the principal elements of appliances (arch wires, anchor bands, attachment bands, and springs) is set forth by describing the procedures of various standardized methods.

Finally the operation of different types of appliances is discussed. Here we find labial arch wires with springs in conjunction with ligatures, auxiliary springs, open tubes (McCoy), and vertical pins and tubes. The lingual arch wire is presented in its plain form and in conjunction with auxiliary springs. (But a description of the edgewise arch is conspicuously absent.)

The author has selected a number of most typical dental anomalies and proceeds to demonstrate the suggested appliance design and adjustment for each of these types separately. Sometimes several alternative methods are suggested for the treatment of one type. In addition, nine complete case reports are presented, with their history and etiology, their diagnosis, and the therapy employed. Some unusual conditions are described which require unusual treatment, for instance, extractions. (However, if there are cases in which extractions of teeth other than the third molars are a necessary treatment procedure, the ones selected by the author are not convincing examples of them.)

Post-treatment requisites form the last chapter of the book. They include the problems of retention, muscle forming, normal metabolism, establishment of a correct overbite, and the duration of post-treatment care.

This résumé of the contents of the volume proves, without further comment, its completeness and its excellence as a textbook. The distinct differentiation of the material into diagnosis, etiology, and therapy is a most valuable feature from the educational as well as the scientific viewpoint, since no branch of the healing art developed into a recognized science until this division had been adequately effected. It may be suggested that the arrangement of the chapters be modified to help carry out the differentiation. This

will be accomplished by placing the chapters on "Denture and Facial Reproductions" and "Roentgen-Ray and Orthodontic Diagnosis" with the other diagnostic chapters at the beginning of the book.

The text is clearly written and fully illustrated; it is supplemented by a comprehensive table of contents and an index. Bibliographic references are made whenever further elaboration on the subject would exceed the scope of this presentation. Students, dentists, and orthodontists who are unfamiliar with McCoy's book will find it well worth their while to study this volume, and this is true even of those who have read one of the previous editions.

E. N.

The Forum

Articles for this department should be sent to Dr. Albert H. Ketcham and Dr. William R. Humphrey, 1232 Republic Bldg., Denver, Colo.

Extraction

Dear Dr. Ketcham:

In your letter of May 23rd regarding Dr. Pollock's editorial "Extraction of Teeth in Treatment" (December, 1934) you informed me that you would ask Dr. Stallard to "write something by way of explanation" of his statement which I had quoted to appear with my letter answering Dr. Pollock. While his letter which was published was interesting, I was greatly disappointed not to find this explanation. I still think that he should explain his statement relative to "50 per cent failures" so that we may know just exactly what he means.

Very truly yours,

Samuel Fine.

Orthodontic Failures

In order that we may know what we are discussing, let us classify orthodontic failures into two groups: (1) those which are so patent that patients are conscious of them and (2) those which are readily discernible by the orthodontist but not by the patients. The failures of which the patient is conscious cause the dissatisfactions among the laity. Patients who have failures recognized only by the orthodontist usually are proud of their teeth and grateful to the orthodontist for the changes wrought by treatment.

Apparently some orthodontists have felt consternation because I once stated that 50 per cent of my treated cases end in failure and that by failure I mean a condition of occlusion that is as bad as or worse than that before treatment. Such misunderstanding has undoubtedly arisen because they are confusing alignment of the teeth with occlusion of the teeth.

Teeth may be aligned and still have wretched occlusion. The wretchedness of many occlusions established by orthodontic treatment is not revealed in plain plaster casts of mouths or in photographs of the closed teeth. Such reproductions of dental apparatus, being incomplete, do not disclose the following gross failures of treatment: the lack of cooperation between cusps and the movements of the mandible, undue premaxillary abstraction, improper curves of Spee, improper declination from the orbitocondylar plane of the occlusal plane, cuspal interdigitations that are at variance with condylar centricity, improper overjetting of the maxillary teeth, and many other de-

tails that interfere with the possibilities of establishing correct occlusion. Proper occlusion of the teeth is a very accurate relationship between the opposing teeth and the anatomic centric position of the mandible.

In the March, 1933, issue of *Dental Cosmos* I reported some of my many failures. Figs. 1, 2 and 3 represent what I consider a sad failure of treatment. Yet the plain plaster cast made of the patient's mouth appears to be as good a result as I find in current textbooks on orthodontics displayed to show what can be done by skillful use of favored appliances. Figs. 4-9 show the defects of another treated occlusion; yet much to my disgust the patient is greatly pleased. Fig. 10 represents what I call a patient-conscious failure.



Fig. 1.—A, Gnathostatic cast of a common malocclusion; B, post-treatment cast of treated occlusion; C, plain post-treatment cast.

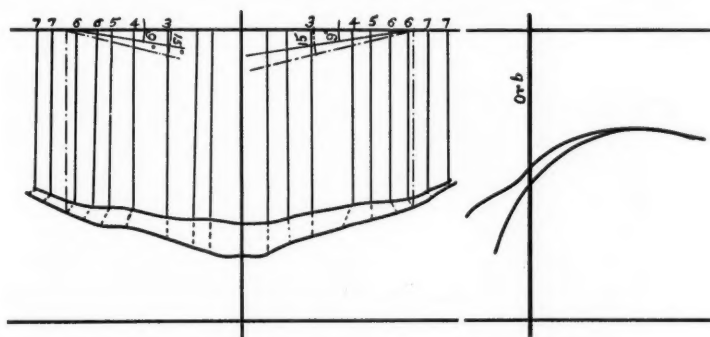


Fig. 2.

Fig. 3.

Fig. 2.—Occlusal curve chart, showing in the upper curve the position of the maxillary teeth before treatment, and in the lower curve the position of the maxillary teeth after treatment.

Fig. 3.—Median sagittal curves of the palate before and after treatment.

Fig. 11 shows what I consider an orthodontist-conscious failure of treatment. The defects of these cases are shown by gnathostatic analysis. If these same mouths had been analyzed gnathostatically, many more serious defects could have been pointed out.

I would not have it understood that I do not have failures in the alignment of the teeth, but I believe sincerely that failure in alignment is sometimes a godsend in treated cases which have improper lateral interdigitations or end-to-end cusp relations in the lateral bite at the end of the primary work.

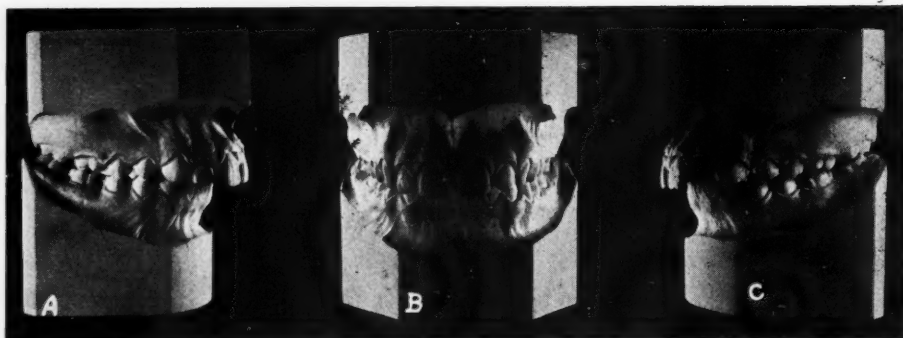


Fig. 4.—Gnathostatic cast of patient having malocclusion similar to that in Fig. 1.

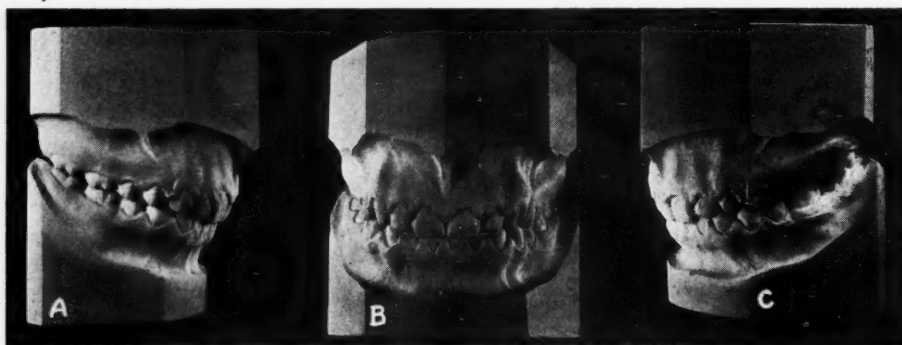


Fig. 5. Gnathostatic post-treatment cast of patient who had malocclusion in Fig. 4.

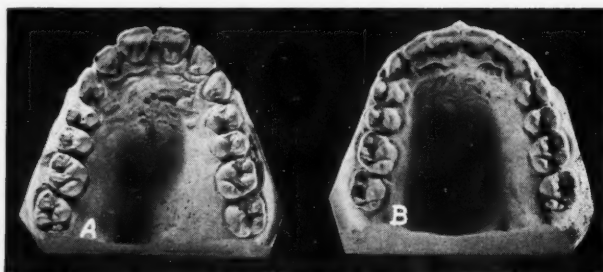


Fig. 6.—A, Maxillary cast of Fig. 4; B, maxillary cast of Fig. 5.



Fig. 7.—A, Mandibular cast of Fig. 4; B, mandibular cast of Fig. 5.

Just how the archaic method of extraction of teeth could possibly aid in establishing occlusion and relating it properly to the motions of the jaw is utterly beyond rational comprehension. A bridge game cannot be improved by de-

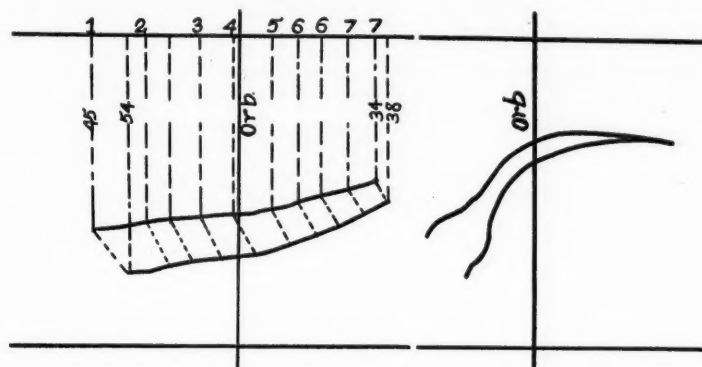


Fig. 8.

Fig. 9.

Fig. 8.—Semiocclusal chart of malocclusion in Fig. 4, and treated occlusion of Fig. 5 (lower).

Fig. 9.—Median sagittal palate curves, before treatment (upper) and after treatment (lower).

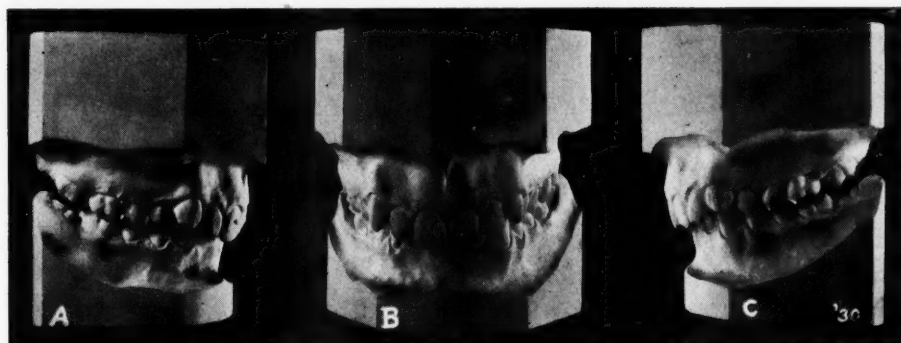


Fig. 10.—Relapsed form of malocclusion.

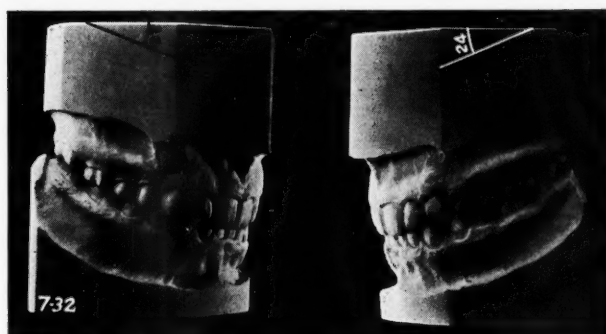


Fig. 11.—Gnathostatic cast of treated occlusion two years after movements had been made.

stroying some of the deuces in the deck. Extraction may improve the appearance of the external alignment of the teeth, but alignment thus gained forever jeopardizes the occlusal surfaces of the teeth and reduces the masticatory efficiency of the mouth inordinately.

I also want it understood that I do not believe the superstition that if teeth could only be arranged accurately enough, they would stay in their new positions without adequate mechanical retention applied for several years, depending upon all those circumstances cited by Oppenheim in Gruenberg's translation of *Malocclusion of Teeth*. It is generally known that the soft tissues connected with osseous structures will tend to carry the bone back to its growth formed shape and that this residual physiologic elasticity of bone persists for many months after it has been changed and retained by therapeutic forces. It seems strange to me that the man first promulgating the conjecture that teeth failed to keep the places given them because they were not treated accurately enough, was a plain-plaster-cast orthodontist who guessed at the intermaxillary relations and indicated these relationships by pencil marks instead of a waxbite taken when the patient closed on his true mandibular hinge axis.

Until 1925 I used plain plaster casts. When I tested my treated cases gnathostatically, I was dumbfounded to note what atrocities were being committed in the name of orthodontic treatment upon patients who were pleased with their results.

In 1928, after seeing some treated cases mounted gnathologically by Dr. B. B. McCollum, of Los Angeles, I was again rudely awakened by the fact that teeth, even though aligned and ostensibly interdigitated into some sort of a protrusive centric closure, could have the grossest malocclusion and could be so misrelated to the motions of the jaw that the chewing ability of the patient was impaired more than if he had never been treated.

Do orthodontists as a rule make any endeavor to determine the anatomic centric position of the mandible before and during treatment? Do they test, during treatment, the interdigitations of the teeth in the lateral closures? Are they sure that they are setting up the teeth on the proper centric intermaxillary relations? Can orthodontists readily articulate a set of Tru-bite teeth without grinding them? If they cannot when they can grab hold of the teeth individually and move them into every direction by their fingers while the wax is warm, how can they expect to articulate natural teeth by merely expanding the arches and arranging the teeth on a protrusive centric closure? Every now and then, I hear of some orthodontist boasting that he never has had to band an anterior tooth or to use intermaxillary rubber ligatures.

There is great hope for orthodontics, and dentistry, too. There will come a time when we shall be able to prevent much malocclusion. The time is near at hand when orthodontic treatment will be applied more accurately than it is at the present time. The treatment will, of course, be much more difficult than the present methods. And, when we do learn how to treat malocclusions better, I hope that a larger percentage of orthodontists will have grave misgivings about the results they will then be attaining.

Harvey Stallard.

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Editorial

Impressions of Officers of American Dental Association on European Dentistry

DURING this past summer the President of the American Dental Association, Frank M. Casto, the immediate past President, Arthur C. Wherry, and the President-Elect, George B. Winter, forming a threesome, traveled in Europe in order to see at first hand dental conditions as they exist abroad. Plainly the inspiration for the trek was the various and sundry plans and schemes which are being constantly thrust before the dental profession in America at the present time under the head of health insurance for the masses. The observations of these men are interesting.

In discussing the European situation with this triumvirate the impression is quickly gained that European dentistry is quite apart from dentistry as we

know it in America. First, there are two classes of dentistry—European dentistry and European panel dentistry, compulsory dental service under state supervision and insurance dentistry, and so on. These representatives of American dentistry are sincere in the high tribute which they pay to the 5 or 10 per cent of European dentists who are practicing independently in the various countries, and who maintain the highest ideals and render superior dental service. They point out that this 5 or 10 per cent of dentistry in Europe is entirely separate from the practices which they were making an attempt to survey.

According to Dr. Wherry, "I have the highest regard for the intelligence, the professional attainment, and the ethical practices of the men practicing dentistry independently in the various European countries in which I traveled, but unfortunately they are a small percentage of the membership of the profession.

"My observations convinced me that the great majority of the poorer classes in the European countries are, in many instances, receiving dental service that is worthless because it does not attempt to provide anything but emergency relief and the cheaper class of restorative service. In no country did we find evidence of panel dentistry or government supervised dentistry delivering to the poor people a service anywhere comparable with the type of dentistry that has been furnished—many times free of cost—to the poor in this country. In addition, the manner in which machinery has been built up to handle the administrative features of supervised professional service is the most discouraging feature of the whole system, and it should arouse the men of the medical and the dental professions in America to realize the hazard of such a system and the demoralizing influence it would have should it ever be injected into our own set-up.

"In my opinion, this is the least appreciated of any important subject by the men of our profession in this country. It has been misrepresented by men with distorted viewpoints and possibly mercenary motives. It will be my aim during the months to come to give my utmost to visualize to the men of our profession the falseness of this whole system, and its worthlessness."

President Casto, in commenting on the practice of dentistry on the Continent and in the British Isles, says:

"The comparatively few dentists who are engaged in private practice exclusively and those who do but a small percentage of insurance practice are using approved scientific methods in diagnosis and treatment.

"My observation of dental practice outside of those mentioned in the above groups and which comprises by far the majority was most disappointing. It was almost invariably true that in proportion to the larger percentage of insurance practice engaged in, the lower were the standards maintained and the poorer was the quality of service rendered. The type of service in these cases was almost entirely confined to plastic fillings, particularly amalgam fillings and vulcanite dentures. The equipment of this group was inadequate, of inferior quality, and of antique vintage.

"The most vivid impression I have of dentistry in the European countries visited is a living, walking, glaring monument of false teeth. So far as I could learn, there is practically no program for public dental health education and little effort is made to promote preventive methods.

"One noteworthy thing that may be mentioned is that all unethical advertising is prohibited by law. This, to say the least, is a most happy and commendable situation.

"It may be said in fairness that all dentistry is not below the standard of American dentistry, but it is quite certain that dentistry under the present insurance plan is a demoralizing and degenerative process, and I can see no hope of improvement either in the type and quality of service or in the advancement of the profession as long as this plan is in effect."

George B. Winter, president-elect, states: "Last year and again on a recent trip, I made quite a study of the system in England, and found that the English plan is not suitable to our practitioners or patients. Our Economic Committee is facing a very difficult problem. It is up to them to formulate a plan that will be just, yet suitable to our American practitioners and patients. I fear they must proceed on a new line and develop something original and different."

The American Dental Association and American dentistry are most fortunate in that their destinies are being directed by officers and committees who have sufficient energy and dental patriotism to investigate at first hand a subject so important as the trends which are being injected into the general practice and set-up of American dentistry today. It is said these three officers of the Association will have more to say in regard to the subject at the New Orleans meeting in November. Their further impressions and reports will be looked forward to by the American dental profession with a great deal of interest.

H. C. P.

News and Notes

North Atlantic Orthodontic Society

The next meeting of the society will be held November 26 at 8:00 P.M. in the Knights of Columbus Building, One Prospect Park West, Brooklyn, N. Y.

The subject of the meeting will be "When Should Orthodontic Treatment Be Instituted?" This will be presented by an illustrated lecture upon a practical basis and considered from the standpoint of the general practitioner with a view to clarifying certain debatable points which affect his responsibility, both in referring cases and in rendering services personally.

TALBOT H. LEBLANC, Secretary,
515 Ocean Avenue,
Brooklyn, N. Y.

Southern Society of Orthodontists

The fourteenth annual meeting of the Southern Society of Orthodontists will be held at the Signal Mountain Hotel, Chattanooga, Tenn., on January 27, 28, and 29, 1936.

WILLIAM P. WOOD, JR., Secretary
442 W. Lafayette Street
Tampa, Florida

Southwestern Society of Orthodontists

The fifteenth annual meeting of the Southwestern Society of Orthodontists will be held at the Rice Hotel, Houston, Texas, on October 31, November 1 and 2.

A cordial invitation is extended to all orthodontists and members of the American Society of Orthodontists to attend our session on their way to the meeting of the American Dental Association in New Orleans the following week.

LOUIS S. WINSTON, President
4115 Fannin Street
Houston, Texas
HARRY H. SORRELS, Secretary
Medical Arts Building
Oklahoma City, Okla.

American Society for Promotion of Dentistry for Children

The ninth annual meeting of the American Society for the Promotion of Dentistry for Children will be held at the Roosevelt Hotel, New Orleans, November 4.

A meeting of unusual importance and merit is planned for those interested in dentistry for children.

WALTER T. MCFALL, Secretary & Treasurer
106 Forrest Avenue, N. E.
Atlanta, Georgia

Omicron Kappa Upsilon

There will be a luncheon for members of Omicron Kappa Upsilon at 12 o'clock noon, Wednesday, November 6, at the Roosevelt Hotel, New Orleans. A short program will be provided.

All members who are in attendance at the convention of the American Dental Association are urged to be present.

Dr. F. J. Genre of 6363 St. Charles Avenue is chairman of the local committee.

ABRAM HOFFMAN, Supreme Secretary-Treasurer
311 East Chicago Avenue
Chicago, Illinois

American Dental Assistants Association

The eleventh annual meeting of the American Dental Assistants Association will be held in New Orleans, Nov. 4-8. Headquarters will be at the Bienville Hotel. For further information address

LUCILE S. HODGE, General Secretary,
401 Medical Arts Building,
Knoxville, Tenn.

Association of American Women Dentists

The fourteenth annual meeting of the Association of American Women Dentists will be held November 4 at the Roosevelt Hotel in New Orleans. All women dentists are cordially invited to attend.

ELSIE GERLACH
1838 W. Harrison Street
Chicago, Illinois

Chicago Midwinter Meeting

The Chicago Midwinter Meeting will be held at the Stevens Hotel, February 17 to 20, 1936, inclusive.

Tennessee State Dental Association

The next meeting of the Tennessee State Dental Association will be held in Memphis, May 11, 12, and 13, 1936, at the Peabody Hotel.

J. FRANK BIGGER, President,
Medical Arts Building,
Memphis, Tenn.

E. J. JUSTIS, Sec'y-Treas.,
Exchange Building,
Memphis, Tenn.

Graduate Work in Orthodontics

The graduate division of the College of Dentistry of the University of California has announced a course in orthodontics "for graduates of dental colleges of approved standing." With the satisfactory completion of an outlined curriculum plus a thesis, the graduate student

may become a candidate for degree of Master of Dental Science in Orthodontics. It is claimed for this course that it provides more specialized and detailed instruction than is ordinarily possible in undergraduate curriculums. It is further pointed out that those leading only to the degree of Master of Dental Science will be admitted. The Committee on Graduate Studies in the College of Dentistry will review the credentials of applicants and select for enrollment those whom they deem best qualified to undertake graduate studies in dentistry. Personal interviews and written or oral tests may be required. All candidates for the degree of Master of Dental Science must pursue all courses in residence for not less than two calendar years of half-time attendance. The Graduate Committee in Orthodontics consists of: Spencer R. Atkinson, director of the course, chairman; L. E. Ford; C. F. S. Dillon; David W. McLean; Julio Endelman.

Socialized SERA Medical Plan

One of the most extensive programs of socialized medicine ever undertaken in a modern city was launched in Los Angeles on July 26 as 4,359 physicians, surgeons, dentists, osteopaths, and druggists began ministering to 400,000 persons on relief rolls. The medical service will be paid for by the SERA at fixed rates which, although below those usually charged in private practice, nonetheless are sufficiently high to pay more than the cost of service.

Under the county's plan no person on the relief rolls will lack any detail of medical, dental or pharmaceutical care. If there is any illness in the home, the social case inspector will be notified. He, in turn, will notify the medical society worker stationed in the SERA district for an order on a dentist, physician, or druggist.

Any unemployed person who breaks his spectacles can have new lenses ground. If any child is undernourished, a public health nurse will prescribe special food and a SERA check will pay for the added diet.

Dr. Louis Boonshaft, veteran public health official and medical director of the SERA in the county, is in charge of the program. He said there is no restriction on the medical service. While surgery of a minor nature will be done by doctors on the SERA panel, major operations will be performed at the county hospital.

All types of dental work will be provided except the manufacture of new dentures or false teeth. Expectant mothers will be given prenatal service. A doctor and a nurse will be sent to the home for the delivery of the baby. A kit of medical and surgical supplies and a layette will be furnished each expectant mother a month before the infant's arrival. If the mother desires to go to a hospital, arrangements will be made to send her to the Los Angeles General Hospital for the delivery.

Nurses trained in public health will be assigned by the SERA to the Los Angeles, Long Beach, Pasadena and county health departments to work with regular health officers. All the service under the socialized medicine program has been authorized by recent provisions of the federal government. Los Angeles is one of the first cities to organize the administration of the funds allotted.

A Plan for Medical, Dental, and Hospital Service

The establishment of a bureau through which patients of limited means may pay for medical, dental, and hospital care in installments over a period of months has been approved by the St. Louis Medical Society and the St. Louis Dental Society. The agency is to be known as the Medical Economic Security Administration of St. Louis. The Administration will be financed by a fund of \$5,000, of which the St. Louis Medical Society will lend \$3,000, the Dental Society \$1,500, and the County Medical Society \$500.

According to the plan, patients in need of professional services will be referred to the Central Admitting Bureau. Inquiry then into the financial status of the patient will be made by this Bureau. If the patient is unable to pay, he will be referred to one of the free clinics of public hospitals. If he is able to pay, the Bureau will make arrangements with him

for monthly payments through the Medical-Dental Service Bureau. The Bureau will aid the physicians and dentists through a regular collection of fees. The Bureau will collect fees over a period of months on installments, deducting 10 per cent for its services. Ten per cent deductions, less operating expenses estimated at 2 per cent, will go into a sinking fund, out of which the professional men will receive their fees if the patient is unable to continue the payments.

The plan is similar to one that has been in operation at Washington, D. C., for more than a year, and it is believed will work out successfully in the city of St. Louis as it has in Washington.

Mottled Teeth in Texas

Mottled enamel of the teeth, a condition traced to water supplies, is on the increase in a vast area of Texas, affecting many thousands of inhabitants, the United States Public Health Service has learned by a survey.

Changing from a normal smooth, glossy surface, and creamy color, teeth of the affected individuals show opaque, paper-white patches and streaks, and there may be brown stain and tiny pits in the tooth surface. It has been demonstrated that very small quantities of fluorine in water can cause this dental disease.

"The Panhandle-west Texas region constitutes the largest mottled-enamel area in the United States," says the report to the United States Public Health Service by Dr. H. Trendley, Dean of the Service, and R. M. Dixon and Chester Cohen, representing the Texas State Department of Health.

"The fact that the municipal water supplies of such large cities as Amarillo, Lubbock, and Plainview, contain the causative factor of mottled enamel in sufficient concentration to produce this hypoplasia in a high percentage of their children, has developed an acute and urgent public health problem."

Pacific Coast Society of Orthodontists

Northern Section

The spring meeting of the Northern Section was held in Spokane, May 23, with Chairman Wm. F. Clark presiding. The election of Milton Fisher as Director for the Northern Section was confirmed. S. B. Hoskin was elected Chairman, and James T. Walls was elected secretary-treasurer for the ensuing year.

M. R. Chipman presented a clinic on photography, displaying an excellent knowledge of photographic technic. H. L. Morehouse demonstrated the welding of stainless steel attachment to precious metal bands. The remainder of the program was devoted to informal clinics on the "tremendous trifles" in technic which make for smoother office routine.

Central Section

The Central Section met June 11 in San Francisco. The meeting was called to order by Chairman McCowen.

Wm. Ryder presented an interesting and instructive paper on "Roentgenographic Interpretation in Relation to Orthodontics." This paper was very complete in its scope and gave the evaluation method of x-ray interpretation now used at the University of California, showing the points to be observed in x-ray determination in order that an accurate diagnosis can be made. Earl Lussier presented a case report on root resorption, giving a very complete explanation of history, prognosis, treatment, and results obtained, with slides showing the complete record. Will Sheffer's paper on "Photography, an Aid to Orthodontics" was well outlined and was illustrated with slides, showing the need for accuracy and standardization, with an explanation of some of the pitfalls in the common methods of photography.

Southern Section

The meeting was held in Los Angeles, June 7, with C. E. Thompson as chairman.

James McCoy presented the resolution to appoint a special committee to be known as the Committee on the Conduct of Orthodontic Practice. The resolution was unanimously adopted.

Frank Heimlich gave a résumé of the meeting of the American Society of Orthodontists in New York. An interesting and instructive historical review of the development of orthodontia from its earliest beginnings to the present time was given by Eugene Gould in a paper entitled, "The Parallel Evolution of Orthodontic Knowledge and Appliances." Spencer Atkinson presented a paper and a clinic on the use of sectional arch wires in the treatment of malocclusion; he discussed his methods of treatment and demonstrated his bracket and arch wires.

Twelfth Dental Congress of Paris

The Twelfth Dental Congress of Paris will be held November 21 to 24, 1935, in the halls of the "Ecole Odontotechnique" of Paris, 5 Rue Garanciere, Paris.

MONSIEUR RENE SUDAKA, Secretary General,
143 Avenue Emile Zola,
Paris.

Notes of Interest

Dr. Alexander Sved announces the removal of his office to 654 Madison Avenue, New York, N. Y. Orthodontia exclusively.

Dr. James C. Allan announces the removal of his office to 630 Fifth Avenue, New York, N. Y. Practice limited to orthodontia.

Dr. Stanley M. Dow announces the removal of his New York office to the International Building, Rockefeller Center, Room 1869, Professional Floor, 630 Fifth Avenue. Practice limited to orthodontia.

Dr. John S. Voyles announces the removal of his office to 908 Beaumont Medical Building, St. Louis, Mo.

Dr. Harry R. Faulkner announces the removal of his office to 1133 Bank of America Building, San Diego, Calif. Practice limited to orthodontia.

Dr. Philip Dorenbaum's new address is 444 Angell Street, Providence, R. I. He has recently converted a colonial house; the lower floor is for the personal use of Dr. Dorenbaum in the exclusive practice of orthodontia; the upper floor is occupied by his associate, Dr. Walter F. Tompkins, devoted to the practice of dentistry for children.